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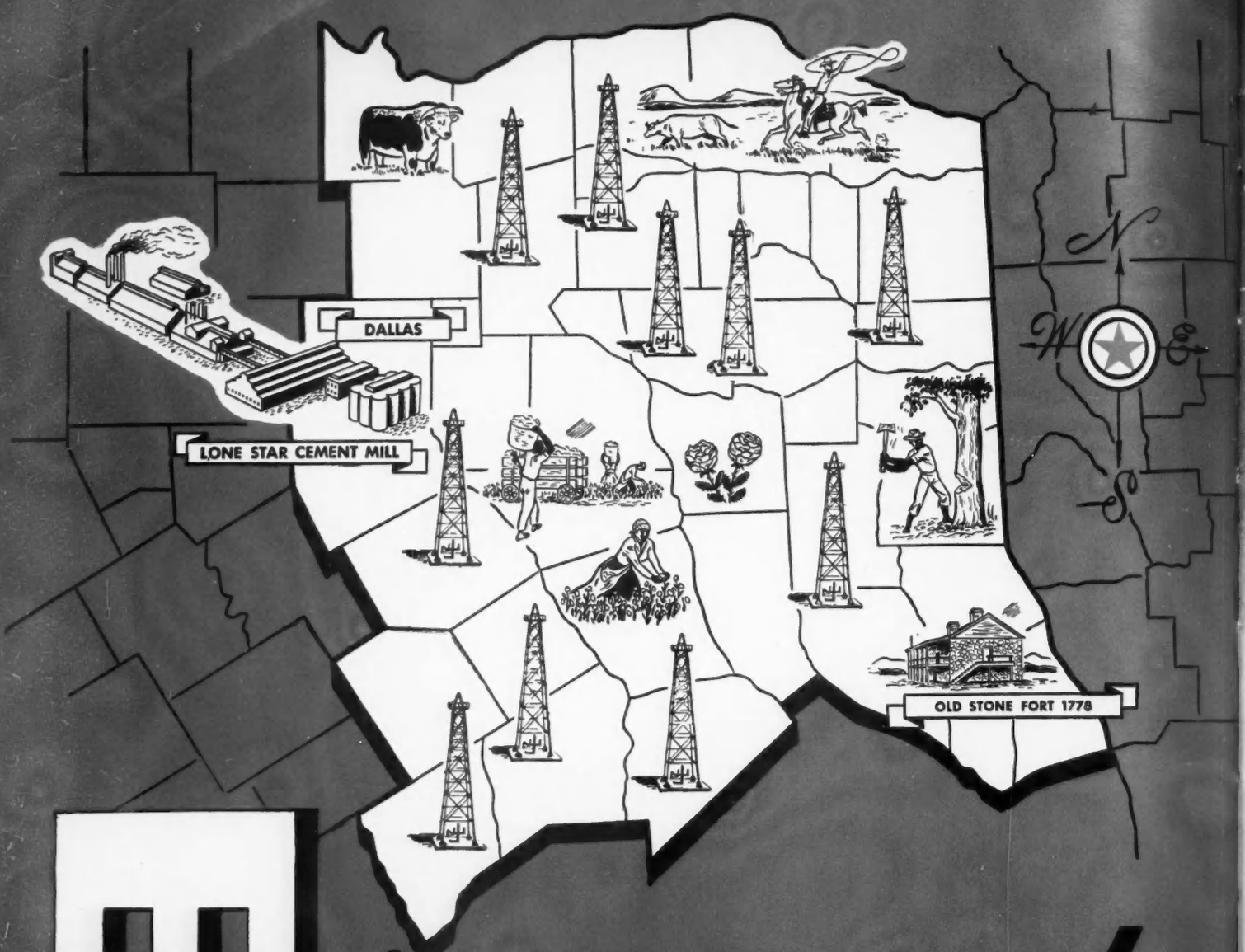

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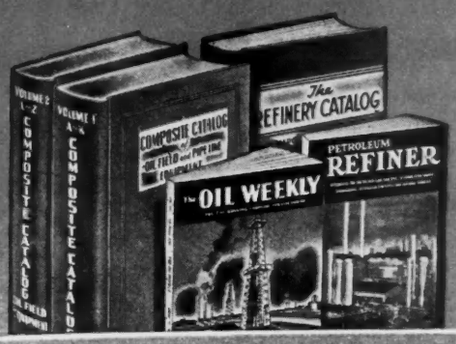

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Looking Ahead

WITH THE EDITOR

EVER since the discovery of prolific production in the basement schists of the Santa Maria Valley in 1944, serious consideration has been given to the possibilities of production from the fracture-permeability type reservoirs. It has been well established that the primary source of commercial deposits of petroleum resided in sedimentary formations where void space between the sand grains formed a container for the fluid. With the advent of this fracture-permeability type reservoir in these metamorphic rocks (schists), geologists working in California had to revise their fundamental concept of a petroleum reservoir. It is not necessary to stop at the Tertiary sands when considering prospects for petroleum. The first true schist production was discovered in the western part of El Segundo pool where the fractured schists are overlain by impermeable shales. Odd as it may seem to those not familiar with California geology, the Mesozoic rocks are regarded as basement formations. The above and many more related points in regard to this type structure are discussed at length by William Ross Cabeen and Harold H. Sullwold, Jr., in their joint paper "California Basement Possibilities" which will appear in the next issue of THE OIL WEEKLY. The basement structure and development of El Segundo, the Santa Maria Valley, the Wilmington field and the Edison field are given detailed consideration.

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Engineer Training Having Its Troubles

THOUGH 73,269 engineering students were enrolled in United States and Canadian schools on November 5, 1945, which increased enrollment 76 percent over the low of 41,632 in 1944-45, there still remains a deficit of 150,000 in the engineering and scientific manpower supply as reported by Vannevar Bush, director of the U. S. Office of Scientific Research and Development. Almost half of this enrollment is in the freshman year, and 25 percent of the total are veterans. About 2.5 percent are women. According to William B. Plank, head of the department of mining and metallurgical engineering of Lafayette College, Easton, Pennsylvania, and a director of A.I.M.E., writing in *Mining and Metallurgy* for May, 1946, as the situation now stands anything like a normal number of engineering graduates cannot be expected until the present freshman class graduates in 1949.

In the fields of petroleum and natural gas engineering, Plank indicates the peak of enrollments, 3538, was in 1938-39. That year also showed the largest number of geological students enrolled, 844. Steady decline in enrollment in those fields was noticeable by 1941-42, which was the year in which the highest total of all engineering students was recorded. In 1944-45 only 376 petroleum and natural gas engineers were enrolled in the United States and Canada. By November 5, 1945, this was 1083.

Agencies and industries connected with these fields of engineering should start now to remedy this situation. A pamphlet on geology and on mining and metallurgical engineering, being prepared by the National Roster, should be of assistance in vocational guidance literature. The petroleum industry might issue something similar, revising and bringing up to date the incentives offered to college-trained personnel and new uses and aspects of petroleum learned during the war. Additional engineering scholarships offered by oil and allied industries doubtless would draw more good men into the field, as is indicated by the recently enlarged assistance plan of the Coal Division. Such scholarships could be increased and broadened to attract students not necessarily connected with petroleum and natural gas.

Even as enrollment picks up, the danger of overcrowding our leading colleges is apparent. The enrollment will make for huge freshman classes, which are now having housing problems, and later will face the handicap of crowding in departmental laboratories, unless colleges by that time are able to expand their facilities and increase their badly depleted teaching staffs. Speed-up programs and night laboratory classes may be necessitated by these larger classes. Drawing highly qualified men into the teaching of petroleum, geological and natural gas engineering is as essential as promoting the interest of students in those fields.

Successful Venture In Conservation

A RECENT example of flare gas conservation and one which is destined to become an outstanding example of what can be done along such lines is the project recently inaugurated in West Pampa where approximately 30 West Texas operators have joined to return all available casinghead gas from approximately 11,000 acres, back into the producing formation. The project further utilizes extraneous dry residue gas being produced from gas wells in the field to provide energy to increase oil production from the oolitic brown lime formations from which the oil in the field is being produced.

This project, which has been under way for about 60 days, gives promise of becoming a successful venture in the conservation of both oil and gas. It could well serve as an example of other similar projects throughout the Southwest.

Natural Gas Prices Bound to Increase

THE state of Louisiana is spearheading a drive designed to bring about increased field prices of natural gas produced in the Southwest.

Its first move was the adoption of a resolution by the Louisiana Legislature urging the Governor "to immediately take such steps as may be necessary in an effort to obtain the full and complete cooperation of the other Southwestern gas producing states with the view of bringing about a substantial increase in the wellhead price of natural gas in the state of Louisiana and the entire Southwest."

On the heels of this, the Louisiana Senate Committee on Conservation acted favorably on a measure which would have authorized the State Conservation Commission to fix minimum field prices for natural gas produced and sold in the state. This proposal, however, was killed by overwhelming vote, a fate which the author, Senator H. Alva Brumfield, said that he had expected. "I thought the problem should be studied, and something done to increase the present totally inadequate price," he said. "Instead of three cents per 1000 cubic feet, something closer to ten cents would be more in line."

A company has brought action in Oklahoma to have authorities in that state take similar price-fixing steps with reference to natural gas from Oklahoma fields.

These activities might be regarded purely as educational. Better gas prices are in line for natural gas as its market demand increases and everything points to a steady growth in consumption rates both for home and industrial uses. The economic law of supply and demand will eventually fix the proper price.

* * *

Sixty-five percent of the total tonnage of overseas shipping for war purposes consisted of petroleum products.

Youngstown to ILLINOIS

ILLINOIS is one of the most active oil regions, even though 1941 saw the end of its greatest drilling boom. It tops the list in number of wildcat wells projected for this year, well ahead of North Texas, the most active wildcatting area of that great oil state.

The oil strength of Illinois lies in its many scattered pools. Proven reserves increased a good ten percent last year--up to nearly 360 million barrels, which is more crude than is produced annually in Soviet Russia, or all the rest of Europe, or Asia. Ranking eighth among the states in total proven reserves and sixth in 1945 crude production and sixth in all-time production, Illinois will continue as one of America's important petroleum sources for years to come.

Ever since Illinois' oil industry really got under way in 1905, Youngstown has been a major supplier of drill pipe, casing, tubing and line pipe. Operators here, as in every other oil producing area in the world, have learned through experience to recognize the orange bands on Youngstown pipe as the mark of quality and dependability.

Location circled indicates Continental Supply Company store.

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The Week's News

THE extent of the operation of the National Petroleum Council will depend upon the position taken by the Department of Justice toward a clear-cut delineation of activities which the Council may undertake without fear of transgressing the antitrust laws, it was developed last week at a meeting of the NPC organization committee. Page 29.

FPC Natural Gas Hearing—Witnesses described the natural gas situation in California and coal research plans were outlined at the FPC hearing in Washington. Gas industry to present its case this week. Page 28.

Jersey's Patent Rights—Standard Oil Company (New Jersey) retains title to bulk of patents purchased from I. G. Farben Industrie before the war, a federal court holds. Page 27.

Flare Gas Elimination—Stanolind Oil and Gas Company along with other firms has a state-wide program under way which will result in eliminating many gas flares. Page 30.

Interagency Oil Committee—Ralph Davies has asked several governmental departments to nominate their representatives on the inter-agency committee which will be the governmental counterpart of the National Petroleum Council. Page 29.

Davies and OGD Post—Thought that Ralph K. Davies would become permanent director of OGD was dispelled by his departure for California. After a rest he is expected to return to the oil industry. Page 29.

Rubber Program—The Senate wants WAA to hold up disposal of various war plants until six months after a national rubber program has been submitted to Congress. Page 27.

Styrene Plants—WAA is offering for sale or lease four styrene plants in Pennsylvania (Kobuta), Texas (Velasco and Texas City) and California (Los Angeles), representing a wartime investment of $118 million.

Science Foundation Stymied—The Senate passed legislation creating a National Science Foundation but will have to do its work all over again next year because of the failure of the House to get the measure into shape for action on the floor before adjournment. Page 28.

Oil and Price Control—Special provision is made in the new price control bill approved by the Senate for petroleum and petroleum products. Stripper subsidies would be continued until next year. Story below.

Pipe Prospects — Anticipating a long-continued high demand for pipe and tubing, steel companies are programming expansions of their production facilities with National Tube Company announcing that output will be upped some 320,000 tons a year by 1949.

New Price Control Bill Makes Special Provisions for Oil and Stripper Aid

The Senate last week wrote new price control legislation more anti-OPA in some respects than the original bill which President Truman rejected June 28, raising anew the question whether the chief executive would sign the measure unless drastically modified in a House-Senate conference.

But there was some question, too, whether the bill would go to conference, members of the House having expressed an intention of calling it up for concurrence in the Senate amendments, which would result in the President getting a bill written by opponents of OPA.

For the oil industry, price control extension legislation consisted of two provisions, one providing that there should be no price regulation of crude or products unless a shortage of supply for domestic consumption occurs, the other continuing subsidies for stripper-well production through March, 1947.

Senate Votes on Oil

The ban on oil price ceilings was adopted by a vote of 40 to 30 on an amendment sponsored by Senators Moore and Thomas of Oklahoma, Reed and Capper of Kansas, O'Mahoney and Robertson of Wyoming, Eastland of Mississippi, O'Daniel of Texas, Willis of Indiana and McClellan of Arkansas.

Unlike the provision for decontrol of oil written into the original bill in the Senate and tossed out in conference, which called for release June 30, the new amendment prohibited the reimposition of controls, and guarded against any attempt by OPA to use an actual or mythical world shortage as an excuse for ceilings by providing that they could be imposed only in the event of a domestic scarcity.

Text of Amendment

As adopted by the Senate, the amendment read:

"Nothing contained in this act shall be construed to authorize the administrator to impose or maintain price controls with respect to petroleum and petroleum products processed or manufactured in whole or substantial part from petroleum unless the price decontrol board established under subsection (H) shall have first determined and certified in writing to the administrator that the supply of crude petroleum or the particular petroleum production which price controls are to be imposed or maintained is insufficient to meet the domestic consumptive demand therefor."

In no particular hurry to pass the legislation which majority leader Alben W. Barkley was trying to speed up, the Senate spent considerable time in debate on the oil situation, much of it derogatory to the OPA and Price Administrator Paul Porter. Reviewing the history of oil price control, senators supporting the amendment charged that Porter had no intention of relinquishing his authority over petroleum—that if he had had, he could and would have done so long before, when supply and demand began to come into balance. Even at the close of June, in the face of the most satisfactory inventory position the industry had enjoyed for several years, Porter held that the demand for oil was so great that it was creating pressure upon the ceilings of many petroleum products and intimated that a shortage of gasoline was in prospect.

OPA's Record on Oil

"The record of OPA in its dealings with the petroleum industry is such that every man in the industry knows that unless congress excludes petroleum, price controls will be maintained upon this industry, which has since V-J Day been in a position to oversupply domestic demand for crude petroleum or any petroleum products, including all demands of the Army and the Navy," Senator Ed Moore of Oklahoma said. "There is also convincing evidence that unless petroleum is excluded from the joint resolution, it is the intent and purpose of the administrator to continue these controls on the oil industry notwithstanding what the supply and demand situation may be, and regardless of the unanimous recommendation of the industry and OPA's industry advisory committee."

Alabama, Georgia Expansion Plan Is Approved by FPC

The Federal Power Commission has approved a $2,608,200 expansion project proposed by Southern Natural Gas Company, which will include the construction of some 80 miles of 16-inch pipe line from the Gwinville gas field in Jefferson Davis and Simpson counties, Mississippi, to Pickens, Miss., and about 7 miles of 6-inch line near Talledega, Ala.

The facilities will enable the company

to supply gas to a number of communities in Alabama and Georgia.

The 80-mile main line is necessitated by a contract the company has made with The Superior Oil Company for a 20-year gas supply from the Gwinville field. Heretofore, Southern Natural has obtained its gas in Texas and Louisiana, moving it through its pipe line system extending from the Logansport gas field, Texas, through Louisiana, Mississippi, Alabama and into Georgia.

Mississippi, Louisiana Lines Are Authorized

On July 12th FPC authorized the United Gas Pipe Line Company to construct additional facilities in Mississippi and Louisiana at a cost of $2,277,000 including extensions from the Baxterville and Gwinville gas fields, Mississippi, and Hayes field, Louisiana, to its main transmission line, and four miles of loop. Construction of the extensions will enable the company to augment its gas reserves, under contracts with Gulf Refining Company for 7.2 million MCF annually from the Hayes field, 10 million MCF from the Baxterville field and 14 million MCF from Gwinville.

Texas Well Permits

Permits to drill 127 new wells in Texas were approved by the Texas Railroad Commission last week. There were 26 in North Texas and 28 in Southwest Texas.

West Texas reported 39 permits, and there were 6 from East Central Texas, 7 from the Gulf Coast, 16 from West Central Texas and 5 from the Panhandle.

Carter's Research Plans Shown by New Assignments

Indicative of an expansion of the research activity in the Carter Oil Company laboratory at Tulsa is the announcement of a realignment of research activity responsibilities made recently by H. F. Moses, vice president in charge of exploration.

P. S. Williams

Under Dr. P. S. Williams, chief of research, will be divisions devoted to exploitation research, geophysical research, geological research and development engineering.

Dr. Eugene M. McNatt will be in charge of geophysical research; Dr. William A. Bruce will direct exploitation research; Dr. Parke A. Dickey will head the geological research work, and F. G. Boucher will supervise development engineering. The assignments are effective immediately.

RMOGA Meeting

The Rocky Mountain Oil & Gas Association semi-annual directors meeting, held at Yellowstone National Park June 28-30, was attended by more than 100 members. Included in the discussion were operating conditions under the federal leasing bill revised last week in the House, possible conservation measures and industry tax conditions.

Regarding a conservation law for Wyoming, the board recommended that all operators who have recommendations to make them to the association office by August 1. The Wyoming subcommittee will then incorporate all ideas into a draft of the proposed bill which the board will consider at its September meeting.

New Maps of Berea Sand Are Published by USGS

Two new maps of the Berea sand were released last week by the U. S. Geological Survey, one covering southern West Virginia and the other West Virginia, eastern Ohio and western Pennsylvania.

The map of southern West Virginia, Preliminary Map 59 of the Oil and Gas Investigations series, was prepared from a study of the logs of 2300 wells drilled for oil and gas. It shows that east of the main belt of Berea sand there are lenses of fine sand and siltstone surrounded by areas in which only a layer of "shells" is present at the Berea horizon. Copies may be had at 50 cents each from the Survey in Washington.

The three-state map, Preliminary Map 58, is based on detailed studies of more than 150 outcrop and well samples, and shows that areas in which sandstone predominates in the Berea sand are much more favorable for the accumulation of oil and gas in commercial quantities than are areas of siltstone. On the basis of mineralogy and physical characteristics, the Berea sand is shown to be divided into four main areal types, the sediment in each of which was derived from a different source and deposited in somewhat different ways. Copies of the map may be purchased from the Washington office at 20 cents each.

California Pioneers Active

The Petroleum Production Pioneers is rapidly becoming one of the largest organizations in the California petroleum industry. Just slightly more than two years old, it has a total of 460 duly elected members, according to J. E. Gosline, president. Two types of members are accepted, Pioneers and Juniors, with the Juniors in charge of meeting arrangements and all other chores. It has in progress, under the direction of Ted Sutter, historian, plans for the development, recording and preservation of an authentic California petroleum history. Shown above is the executive committee of the Pioneers. They are, left to right, standing, E. B. Fowks, T. A. Atkinson, J. J. Siegel, E. W. Webb, and B. Bronzan; seated, left to right, are S. H. Grinnell, F. F. Hill, Gosline, Sutter, and R. Sneddon. Members not in the picture are Lin Little, L. G. Trembley, O. W. Morgan, Jr., C. S. Perkins, A. S. Hayes, and W. R. Guiberson. Under the chairmanship of Lou Bronzan, Baash-Ross executive, plans are being made for a picnic and barbecue Saturday, July 20.

THE OIL MAN'S CALENDAR

AUG. 8–9–10	Interstate Oil Compact Commission, Quarterly Meeting, Grand Rapids, Michigan, Pantlind Hotel.
SEPT. 10–12	Pacific Coast Gas Association, Annual Convention, San Francisco, Fairmont Hotel.
16–18	AIME World Conference on Mineral Resources, New York, Waldorf-Astoria Hotel.
OCT. 1– 2	American Association of Oilwell Drilling Contractors, Annual Meeting, San Antonio, Plaza Hotel.
3– 5	AIME, Petroleum Division, Annual Meeting, Galveston, Hotel Galvez.
7–12	American Gas Association, Annual Convention, Atlantic City, N. J.
16–18	Texas Mid-Continent Oil and Gas Association, Houston, Rice Hotel.
24–25	AIME Petroleum Division, Annual Meeting, Los Angeles, Ambassador Hotel.
24–25	American Association of Petroleum Geologists, Mid-year Meeting, Biloxi, Mississippi, Buena Vista Hotel.
28–30	Independent Petroleum Association of America, Annual Meeting, Fort Worth.
NOV. 11–14	American Petroleum Institute, Annual Meeting, Chicago, Stevens Hotel.
21–23	Rocky Mountain Oil and Gas Association, Annual Meeting, Denver, Shirley-Savoy Hotel.

Wants Congress to Give Ample Study to Rubber Program Before Selling Plants

The Senate last week passed and sent to the House a resolution sponsored by Senator Joseph C. O'Mahoney of Wyoming, prohibiting WAA from immediately disposing of 15 copolymer and 10 petroleum butadiene and 4 alcohol butadiene plants which it reported to Congress June 18 it was planning to sell or lease to private interests (THE OIL WEEKLY, June 24).

Under the resolution, disposition of the plants would be deferred until six months after a national rubber program has been submitted to Congress. WAA, however, would be permitted to dispose of styrene, furfural and carbon black plants and two of the alcohol butadiene plants, and copolymer plants to the extent that their aggregate total rated capacity does not exceed 20 percent of the overall rated capacity of all government-owned copolymer plants.

Calling the resolution up for consideration, O'Mahoney explained that under the law only a 30-day notice to Congress is necessary when it is proposed to dispose of plants costing more than $5 million in the synthetic rubber and certain other categories.

"It is impossible for the Congress to give it the study it ought to have," O'Mahoney said. "We ought to be sure that our synthetic-rubber industry is not hastily disposed of because we may again be dependent upon foreign sources."

A report by the Senate Military Affairs Committee, approving the legislation, pointed out that the inter-agency policy committee on rubber has not yet submitted a report and recommendations with respect to a national rubber program.

Navajo Tribal Leases

Successful bidders recently paid $71,096 in bonuses for oil and gas leases on 43,040 acres of Navajo Indian Tribal lands located in New Mexico, Arizona, and Utah.

Southern Union Production Company, Dallas, paid a bonus of $5544 for 5280 acres in San Juan County, N. M.

Three blocks of 10,240 acres each, located in Coconino County, Arizona, were leased by Ray E. Andruss, El Monte, Calif., for $12,800 bonus; W. B. Scoville, Salt Lake City, Utah, for $2560 bonus; and by H. R. Askins, Phoenix, Ariz., for $8192 bonus.

Byrd-Frost, Inc., Dallas, paid a bonus of $42,000 for 7040 acres in San Juan County, Utah.

Indian Lease Sale

A sealed bid sale of oil and gas leases on restricted lands of members of the Five Civilized Tribes will be held in the office of Superintendent A. M. Landman at Muskogee August 13.

Standard Wins Back German Patent Rights

A final decree has been entered in Federal Court in New York in the action of Standard Oil Company (New Jersey) to recover 798 patents seized by the alien property custodian in 1942 and 1944 because of alleged German interests.

Under the order the oil company attorneys estimated that the firm retained "title or at least exclusive licensing rights" to 70 percent of the patents, which were part of a $35 million purchase from I. G. Farben Industrie, a German concern, in 1929 and 1939.

While rights to the principal buna rubber patents, which were involved in the litigation, were retained by the Alien Property Custodian, company attorneys declared that they had been granted, royalty free, to all manufacturers by Standard "to expedite the synthetic rubber program. Other patents in the proceedings covered processes in oil refining and hydrocarbon.

Standard contended that no German interests in the patent rights remained after 1939, while the government maintained that the transfer of patents from the German company was a transfer in form only.

Ohio Gas Meeting

Governor Edward Martin of Pennsylvania will be the guest speaker Wednesday, July 17, when the Independent Gas Producers Association of Ohio will hold its annual meeting at Granville, Ohio.

Compact Group Works on Uniform Reports

Shown above is the sub-committee on Uniform Reports of Interstate Oil Compact Commission's Regulatory Practices committee, which met in Oklahoma City, July 9, to prepare recommendations for simplification and standardization of forms and reports required by the regulatory commissions of the various oil and gas producing states. Report will be submitted to the entire committee at the Compact's quarterly meeting in Grand Rapids, Mich., August 8-10. Seated above, left to right: Lawrence Alley, chief clerk, Oklahoma Oil and Gas Conservation Department; Glenn Staley, New Mexico proration umpire; T. A. Morgan, committee chairman and director of the Kansas Oil and Gas Conservation Department; Guy Tate, secretary, Magnolia Pipe Line Company, Dallas; E. G. Dahlgren, assistant secretary, Interstate Oil Compact Commission. Standing: Earl Foster, secretary, Interstate Oil Compact Commission.

California Gas Reserves Sufficient For 22 Years; FPC Told at Hearing

California natural gas reserves are sufficient, at current rates of production, for about 22 years, it was indicated before the FPC last week by Roy A. Wehe, assistant director the Public Utilities Department of the California Railroad Commission.

Testifying in the commission's natural gas investigation hearing at Washington, Wehe estimated the state's reserves at eleven trillion cubic feet, and said that production amounts to about 500 billion cubic feet a year.

Wehe indicated that consideration already is being given to the method by which service will be contracted as reserves diminish, if adequate outside sources of supply are not developed, saying that if it becomes necessary to curtail gas service to firm customers they will be cut off in the order of the rate they pay, those paying the lowest rates being cut off first. Interruptible customers would be cut off before any firm customers, and it already is required that new interruptible customers must have stand-by equipment, but contended that interruptible sales are necessary for a satisfactory load factor.

Interruptible sales, he explained, contribute to a lower unit cost and make possible lower rates, but he admitted that, from the long-range view, the relatively low rates presently in effect will necessitate higher rates at that time in the future when reserves near depletion.

California Conservation

The situation is approaching a point where California utilities will reduce the use of gas for steam generation, and Pacific Gas and Electric Company, which increased its use of gas for steam electricity generation when oil was badly needed for war purposes, now is going back to the use of oil despite the fact costs will be increased, he said.

Wehe pointed out that the price of gas in California was frozen by OPA when price control went into effect because it is tied to the price of crude oil. While there have been two increases in the price of crude oil, no increase has been granted on gas, the average field price of which is now 8.3 cents. Elimination of price control, he said, will probably bring an increase to approximately eleven cents.

California producers are getting more for their gas now than ever before, he commented, but they still complain the field price should be increased.

Under cross-examination, Wehe admitted that conservation efforts may be relaxed when California gets gas from Texas through a pipe line recently authorized by FPC, but refused to admit that gasification of coal or commercial development of atomic energy will make the transition from gas to other sources of fuel unnoticeable, pointing out that there is no certainty about those future developments. He contended that conservation should be handled through control of the price of gas, leaving it to the consumer to determine whether he wants to pay the necessary price for whatever use he wants to make of it.

Coal Research Plans

Previously, Dr. Harold J. Rose, vice president and director of research of Bituminous Research, Inc., testified that the coal industry this year will spend $500,000 on research, but while he said this was a substantial increase over past budgets he admitted it was only a fraction of the percentage of gross income which is being spent by other industries in research, and is very modest "in view of the needs of the industry for new coal-burning equipment, for new markets and for catching up on research which was not done in past years."

Rose told the commission that if the coal industry loses its markets to other fuels on a large scale for several consecutive years, research would be critically impaired.

"It is the belief of technologists associated with bituminous coal research that important advances in coal processing and gas manufactured from coal are not only possible but will be achieved if an adequate amount of coordinated research and commercial development is done in the next ten years," he said.

He denied a suggestion by Commissioner Olds that only those in the high income brackets can afford to use manufactured and mixed gas for house heating purposes, but made no effort to show what percentage of low income groups so used it.

Rose supported the coal industry's contention that coal is adequately doing jobs for which natural gas extensions is being sought, and argued that gas "should be conserved for those uses for which it is uniquely suitable."

Reservation of natural gas supplies for the production of liquid methane, which he said could be made cheaply and was a better fuel than 100-octane gasoline for aviation use, was suggested by Harold Stevens, fuel technologist for Appalachian Coals, Inc., but under examination by Don Culton, counsel for the Natural Gas Industry Committee, was unable to say whether the gas owner should keep it until it was wanted for that purpose or the federal government should buy and hold the gas reserves. He admitted the same fuel can be made from coal, although at a higher cost.

Stevens also tangled with industry counsel when he indicated the desirability of arbitrary restrictions on the use of natural gas under steam boilers. He admitted that if gas was prohibited, fuel oil might be used, and that if gas was controlled it might also be necessary to regulate hydro-electric power, fuel oil and coal.

Asked by C. I. Francis, industry committee counsel, whether he though such regulation would be sound national policy, Stevens retorted "somebody has to take a presbyopic view of the situation.

"I think a planned economy—we always have had it since the beginning of the federal government; we have had our tariff, we have had regulation of trade in various ways—I don't see why we should not have it. We have been regulated under the Guffey Act; I don't see why the natural gas industry should not be regulated.

"But," he added, "I am too much of an individualist to think it would be sound policy to permit any federal agency to control competitive energy resources and decide how, when, where and by whom each should be used."

This week, the Commission will enter upon the final phase of its public hearings, the presentation of evidence by the Natural Gas Industry Committee.

Government Royalty Oil Sale Bill OK'd by Senate

Without debate, the Senate accepted amendments inserted by the House and sent to the White House for approval legislation authorizing the Secretary of the Interior to sell government royalty oil to small refiners without crude supplies of their own (THE OIL WEEKLY, July 8).

The measure, originally introduced by Senator Joseph C. O'Mahoney of Wyoming, is designed to give small independents access to the government's royalty oil if and when they are unable to fill their needs from industry sources.

The oil may be disposed of to refiners at private sale, at not less than the posted price, and where two or more refiners seek the same oil the available supply may be divided among them.

House Unlikely to Act on Science Foundation Bill

Legislation creating a National Science Foundation to encourage industrial and other research has been adopted by the Senate, but there is little probability that the House will take action on the measure this year.

No specific appropriation is authorized in the bill, which calls merely for "such sums as may be necessary" to carry out its purposes, which include the making of grants to the states, on the basis of population, for scientific scholarships, and for contracts with universities and other institutions for research.

It was estimated by Senator Warren G. Magnuson of Washington, one of the sponsors, that the cost of the program would be $40 million for the first year, but Senator Styles Bridges of New Hampshire charged it would eventually cost $300 million a year.

The bill adopted by the Senate is a compromise of several measures ranging from little more than government assistance in research to what was charged in committee hearings would be a practical government monopoly of scientific invention. The House has been studying the subject in committee, and a bill is in process of development which differs so materially from the Senate measure that the legislation finally enacted probably will be quite different.

Fear of Antitrust Laws Big Deterrent In Go-Ahead for New Petroleum Council

Fear of the antitrust laws is seen as the major deterrent to whole-hearted industry cooperation in the administration's plan for a National Petroleum Council to cooperate with the Oil and Gas Division and unless some satisfactory arrangement can be worked out with the Department of Justice the program may fall far short of its objectives, it was indicated by discussions last week at the initial meeting of the 15-man committee appointed by temporary Chairman Walter S. Hallanan.

Called to discuss the type of organization to be sent up and the scope of authority and function of the Council, the committee met with OGD Acting Director Ralph K. Davies to acquaint him of its plans so that it would have the right to discuss problems with officials of other agencies, and split into three subcommittees, each with a specific field of action.

Antitrust Prosecution Fear

That the fear of antitrust prosecutions overshadowed all else was evidenced by the fact that one of the three subcommittees was created to deal with the legal phases of the Council's projected activities. The subcommittee is headed by George A. Hill, Jr., president of Houston Oil Company of Texas, Houston, its other members being B. A. Hardey, president of the Independent Petroleum Association of America, Shreveport, La.; Eugene Holman, president of Standard Oil Company (New Jersey), New York; A. Jacobsen, president of Amerada Petroleum Corporation, New York, and R. E. Wilson, chairman of Standard Oil Company (Indiana), Chicago.

A subcommittee to recommend the scope and procedure of the Council consists of B. Brewster Jennings, president of Socony-Vacuum Oil Company, Inc., New York, chairman; Paul Blazer, chairman of Ashland Oil and Refining Company, Ashland, Ky.; W. Alton Jones, president of Cities Service Company, New York; J. Howard Pew, president of Sun Oil Company, Philadelphia, and Joseph E. Pogue, vice president of Chase National Bank, New York.

A subcommittee on organization and personnel consists of B. L. Maiewski, vice president of Deep Rock Oil Corporation, Chicago, chairman; J. Frank Drake, president of Gulf Oil Corporation, Pittsburgh; A. C. Mattei, president of Honolulu Oil Corporation, San Francisco; Frank M. Porter, president of Mid-Continent Oil and Gas Association, Oklahoma City; and Charles F. Roeser, president of Roeser and Pendleton, Inc.; Fort Worth.

The subcommittees, which planned to go into session almost immediately, are to report to Chairman Hallanan before the next quarterly meeting of the council in late September.

They were set up under a resolution adopted by the full committee in which it was declared to be the sense of the committee "that the proposed National Petroleum Council can fulfill a useful function subject to legal clearance in petroleum-industry relations with representatives of the United States Department of the Interior, Oil and Gas Division, in an advisory capacity."

Following the meeting, one member of the committee said there was a general feeling that the plan could be made to work provided the antitrust aspects were cleared up. The legal subcommittee probably will take the matter up with Justice Department officials in an effort to get something more than the formalized letter written by Attorney General Tom C. Clark to Davies before the Council was organized, which was nothing more than the routine statement issued during the connection with advisory committees set up by the various emergency agencies.

Invitations to name representatives on the inter-agency committee which is to be set up as the governmental counterpart of the Council were extended by Davies last week to the War, Navy, State and Commerce departments, the Federal Power Commission and the Civilian Production Administration.

As soon as nominations to the committee are received, Davies will call a meeting at which the purposes of the OGD and the Council will be explained and the part to be taken by the inter-agency group will be outlined.

Meanwhile, Davies is studying the question of staffing the division and has picked three or four men for key positions. Some of the OGD staff will come from other agencies, including probably at least one from the OPA fuel price division.

H. Chandler Ide, who was the first man to join Davies in PAW in June, 1941, and served as his executive assistant until the agency was liquidated last May and since has been consultant to the OGD, has left Washington for a vacation but is not expected to return to the department as a permanent employe, although he probably will continue to serve on a consulting basis.

As he left, Davies released a letter written on the liquidation of PAW, in which he pointed out that Ide's long service "constitutes a unique record and reveals a determination, conscientiousness and constancy rare in the extreme."

Ide, who was associated with Standard Oil Company of California in various capacities for several years before joining the government, is at his home in Alameda County, California.

Crude Oil Production in the United States

(Estimates compiled by THE OIL WEEKLY. All figures indicate daily averages in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED July 13	June 6
Alabama	1,200	1,150
Arkansas	73,700	72,500
California	881,500	880,700
Colorado	35,850	33,000
Florida	200	350
Illinois	208,350	211,400
Indiana	19,700	20,000
Kansas	271,750	239,300
Kentucky	31,250	30,700
Louisiana	382,750	382,150
North Louisiana	82,100	81,500
South Louisiana	300,650	300,650
Michigan	46,500	47,750
Mississippi	67,250	63,550
Missouri	100	100
Montana	25,750	25,250
Nebraska	750	800
New Mexico	99,400	99,400
New York	9,500	13,500
Ohio	8,500	8,500
Oklahoma	384,850	383,350
Pennsylvania	31,750	44,000
Tennessee	35	35
Texas	2,227,550	2,227,550
Tex. R. R. Comm. Districts:		
Dist. 1—S. Central	19,500	19,500
Dist. 2—Lwr. Gulf Coast	158,100	158,100
Dist. 3—Upper Gulf Coast	511,350	511,350
Dist. 4—S. West	228,000	228,000
Dist. 5—E. Central	44,150	44,150
Dist. 6—E. Texas Field	315,000	315,000
Dist. 6—Rest of N. East	107,800	107,800
Dist. 7-B—W. Central	32,000	32,000
Dist. 7-C—West	28,000	28,000
Dist. 8—West	569,150	569,150
Dist. 9—N. Central	129,300	129,300
Dist. 10—Panhandle	85,200	85,200
West Virginia	8,600	9,800
Wyoming	111,750	111,250
Total United States	4,928,535	4,907,085

Total stocks, foreign and domestic, July 6, as reported by the Bureau of Mines were 222,377,000 barrels with a daily average production of 4,905,000 and runs to stills 4,875,000.

Davies Retires from Washington Office

Ralph K. Davies, throughout the war deputy petroleum administrator and currently acting director of the Oil and Gas Division of the Interior Department, is winding up more than five years of government service this week, leaving for California to take a vacation at Lake Tahoe.

Although he will remain available in the event of developments in the OGD pending the appointment of a permanent director, Davies' departure put the quietus on any thoughts that he would be a candidate for that post, and it is expected that, after a rest, he will return to the oil industry.

Davies was the first man selected by former Secretary Harold L. Ickes to assist him when the was named petroleum coordinator for national defense, being appointed to the post of deputy June 9, 1941. He organized the agency which was to become PAW six months later, was its operating head throughout the entire emergency period and liquidated the agency last May.

Pipe Line Divorce Bill

Another measure calling for the divorce of interstate pipe lines from shipper owners and their operation as common carriers has been introduced in Congress. A number of such bills have been submitted over the past few years.

Stanolind's Texas Program to Save About 130 Million Feet of Gas Daily

Stanolind Oil and Gas Company is actively engaged in an overall development of its gas resources in the state of Texas with the object of eliminating flare gas waste.

In the West Texas area, Stanolind has been selected as plant operator for a gasoline plant in the Slaughter pool. Four major operators, including Honolulu Oil Company, Magnolia Petroleum Company, The Texas Company and Stanolind, have entered into agreement to construct the plant. Additional plants in West Texas are contemplated by Stanolind in the North Cowden, South Cowden-Foster-Johnson and Fullerton pools. Here it is estimated that some 100 million cubic feet per day of gas flare will be utilized. In the East Texas area development is under way on a plant in the Carthage pool.

On the Gulf Coast it is proposed to unitize the Burnell-North Pettus pools and construct a cycling plant to process gas from both pools. In the Hastings pool a gasoline plant is now under construction. Here, approximately 30 million cubic feet per day of flare gas will be saved and utilized.

For the entire state of Texas the company's projects will utilize and save approximately 130 million cubic feet of gas per day which is now being flared into the air.

Total projected expenditures for all interests in these projects is estimated at approximately $42 million of which Stanolind's investment will be approximately $27 million.

Ground already has been broken for the plant to be located in the Hastings pool near Houston. The plant will process all gas being flared in that field and has been designed to handle 30 million cubic feet of gas per day and will produce about 60,000 gallons per day of liquid products.

All separators in the field will be elevated and the gas collected at about atmospheric pressure. Absorption will take place at 700 pounds and in this manner all gas from the absorbers will be available for sale directly to gas transmission systems without the need for further compression.

Fractionating equipment is being provided for the production of propane, butane and casinghead gasoline, and, in addition, provisions have been made to separate iso-pentane or iso-butane, should this be desired.

It is recognized that the sale of all residue gas to natural gas pipe lines may not be possible and additional compressor capacity is being provided for storing surplus and unsold gas in one of the sands in the reservoir which will be injected under 3000 pounds pressure. Besides guarding against waste the gas, injected under such pressure, will also be available for jetting purposes if necessary. The disposition of this surplus unsold gas presented something of a problem since pressure maintenance by returning gas to producing horizons is not necessary as the pool has a very nearly perfect water drive.

Estimated cost of the plant at Hastings is $3½ million and operations are expected to begin shortly after the first of the year.

Texas Commission Seeks MER Data at Hearings

A series of hearings to determine maximum efficient rates of production for most of the oil fields in Texas have been scheduled by the Texas Railroad Commission. The last comprehensive survey of this nature was made in 1943. Many observers believe that the study will show a decline in productive efficiencies as a result of over-production in many fields during the war.

Operators have been instructed to be prepared to present information on bottom-hole pressures, gas-oil ratios, rates of oil and water production, porosities, permeabilities, and productivity indices. The Commission has suggested that this information be reduced to averages for reservoirs and fields by the operators from their individual well and lease information.

Hearings will be held as follows:

64 fields in Southwest Texas **District 2** on July 23; 11 fields in Southwest Texas **District 1** on July 25; 111 fields in Gulf Coast **District 3** on July 30; 80 fields in Southwest Texas **District 4** on August 6; 7 fields in East Central Texas **District 5** on August 13; 13 fields in East Central **District 6** on August 14; 14 fields in West Central Texas **District 7-B** on August 20; 2 fields in West Central **District 7-C** on August 21; 86 fields in West Texas **District 8** on August 22; 45 fields in North Texas **District 9** on September 4, and 2 fields in the **Texas Panhandle** on September 10.

Large Attendance Seen For Next Compact Meet

Julius A. Krug, Secretary of Interior, will be principal speaker at the final session of the quarterly meeting of the Interstate Oil Compact Commission to be held at Grand Rapids, Mich., August 8-10, Governor Robert Kerr of Oklahoma, Compact chairman, has announced. It will be Secretary Krug's first appearance before an oil industry group.

All Compact committees will meet on Thursday, August 8, with joint committee meetings on the afternoon schedule.

H. J. Hoffmaster, director of the Michigan Department of Conservation, is slated to give a paper on Michigan oil and gas development. D. T. Andrus of Bradford, Pa., will present a paper on secondary recovery."

Final arrangements for the Grand Rapids meeting were made at a meeting of the Compact's executive committee in Oklahoma City, July 13.

Says Delhi Field Biggest Of Type Since East Texas

Exploration work carried on by Sun Oil Company in the Delhi field, Richland, La., discovered by the company in December, 1944, indicates that it will be the biggest oil find of its type since the discovery of the East Texas field, it was announced yesterday by John G. Pew, assistant to the vice president in charge of production.

Pew estimated that the field will produce at least 175 million barrels of crude, basing his figure on the results of extensive drilling to define the extent and nature of the producing zone.

The Delhi discovery well, the J. E. Holt 1, produced 108 barrels of 41-gravity crude in 24 hours through a 10/64-inch choke. Since then 219 additional wells have been drilled in the field, 105 by Sun, of which 95 were producers, and at present the field is producing 16,000 barrels daily.

Pointing out that the Delhi field is a stratigraphic trap, Pew declared that a great deal more work must be done on methods for locating such deposits, of which, he expressed the belief, many are to be found. He emphasized the difficulty of locating such oil, saying that two dry holes were drilled by his company, one by Gulf Oil Corporation and several by independent producers before the discovery well was completed. Production at Delhi is coming from the Tuscaloosa and Paluxy sands.

Standard of Indiana Plans Fellowships for Research

Establishment of 22 graduate fellowships at 17 educational institutions by Standard Oil Company of Indiana has been authorized by the company, to provide for research.

Fellowships in chemistry, civil engineering, marketing and management, at various leading universities throughout the nation, will be awarded to students working for master's or doctor's degrees, and the average value of each will be $1500 per year.

Robert E. Wilson, chairman of the board, said that holders of fellowships will be under no obligation to Standard Oil as regards subsequent employment, and the sponsoring company will receive no rights to any patents resulting from the work.

Louisiana Gas Policy Gets Setback and Boost

The State of Louisiana's policy of opposing any increased exportation of natural gas received a boost and a setback from the legislature last week.

The House of Representatives voted down a resolution calling for a repeal of the present policy, but the Senate passed a measure which would terminate the Highway Department's policy of prohibiting pipe line companies from using new pipe lines for exporting gas from the state, before permits were granted, and to void all such previous agreements that had been made.

International Petroleum Cooperative Likely to be Organized in October

Articles and by-laws for an International Cooperative Petroleum Association will be considered at a meeting in Zurich, Switzerland, October 1, this year, Howard A. Cowden, president of Consumers Cooperative Association, Kansas City, has announced.

An oil subcommittee of the International Cooperative Trading Agency meeting in London, July 3, instructed Sir Arthur Macdonald, committee secretary and business manager of the English Cooperative Wholesale Society, to prepare necessary papers. The subcommittee, created last September, explored the possibilities of a world oil cooperative. Cowden had proposed a world cooperative in 1937—a proposal which was shelved by World War II.

On the oil subcommittee are Albin Johansson, manager of Kooperativa Forbundet, Stockholm; J. T. Davis, a director of the English Cooperative Wholesale Society, Manchester; Neil S. Beaton, president, Scottish Cooperative Wholesale Society, Glasgow; and A. J. Cleuet, an official of the French Cooperative Wholesale Society, Paris. Cowden, the American member, did not attend the July 3 session.

Delegates interested in the establishment of a world oil cooperative, Cowden anticipates, will come from Australia, South Africa, Egypt, China, Bulgaria, Holland, the Scandinavian countries, France, England, Scotland, Cuba, and other Latin American countries. Following the oil conference they will attend the congress of the International Cooperative Alliance in Zurich the week of October 6, a session which is expected to bring cooperative leaders of 38 or 40 countries together.

Consumers Cooperative Association, a wholesale engaged principally in petroleum, is currently exporting petroleum products to a number of these countries, according to Cowden.

"The world oil cooperative, when launched, probably will begin on a brokerage basis as importer and exported of such products for its member cooperatives," a Kansas City statement says. "In time it probably will engage in crude oil production, refining, and transport by pipe line and tanker, on a global basis. In the meantime, overseas cooperatives are laying the groundwork for a rather broad expansion into petroleum distribution. In Sweden, for example, a national cooperative petroleum federation has been established which likely will become a member of the world oil association, a bulk gasoline storage plant has been purchased at the port of Malmo, and the co-ops there own an interest in a tanker concern."

Cowden will leave for London and Zurich early in September.

Anglo-Iranian Reported Having Labor Troubles

Anglo-Iranian Oil Company, which joined with Gulf Oil Corporation owns the extensive Kuwait oil field, has been having labor troubles in its main fields east of the Persian Gulf, *The Wall Street Journal's* London correspondent reports.

"Since trade unions now have been legally sanctioned by the Persian government, the company was able to form a joint committee of five representatives from management and five from labor to adjust wages and working conditions affecting the company's 55,000 employes spread over 100,000 square miles," the cable stated.

"All would now be comparatively plain sailing but for a political campaign stirred up by Tudeh (Leftish) Party leaders who are maneuvering for power in the forthcoming Persian parliamentary elections. They have injected anti-Britsih bias into the labor problem."

On June 30 the first tanker shipment of oil was made from Kuwait field (THE OIL WEEKLY, July 8). *The Wall Street Journal* says the field is expected to produce more than a million tons (about 7.3 million barrels) of oil this year.

Cradle of Galician Oil In Midst of a Revival

Bitkov, one of the oldest Sub-Carpathian oil fields in Russia, known as the cradle of Galician oil production, is being revived, according to a Moscow report. The report said that 16 oil wells are being operated and production was steadily increasing. Obsolete machinery used during 50 years of exploitation is being replaced by modern equipment.

Meantime, a total of 100 new wells are being drilled in Devonian oil strata in the Tuimazy field, near Ufa, Russia. The field, situated between the Volga and the Urals in an area known as the "Second Baku," was brought into production in 1936, and daily output is nearing 4000 tons (29,000 barrels).

A pipe line is being built to carry the oil from Tuimazy to Ufa, refining center and capital of Bashikria.

Hungary Gas Drilling In Vicinity of Karcag

Drilling for natural gas is being carried out at Karcag, Hungary, where surface indications of natural gas have been noted. Karcag, east of the River Tisza, the main Hungarian tributary of the Danube, is a town on the railway line from Szolnok to Debrecen and in the center of the Hungarian plain.

Turkey Gets Equipment

United States oil field equipment, to be used in prospecting for oil in Turkey, is now being delivered, according to a report from Ankara. Actual drilling will be started as soon as all of the equipment arrives, the report said.

Production in Venezuela Registers Big Increase

Venezuela's crude oil production in the first five months of this year totaled 24,527,671 cubic meters, or approximately 170 million barrels, at the rate of 1,250,000 barrels daily.

This compared with 19,211,224 cubic meters, or 134,478,568 barrels, for the same period last year. Only 2,265,130 cubic meters, or approximately 15 million barrels, were refined in Venezuela during the first 5 months. The remainder was exported.

Meantime, in western Venezuela the production for the first quarter of 1946 totaled about 61,296,764 barrels, an increase of 31 percent from the 46,723,029 barrels produced in the like period of 1945.

Output in March, 1946, amounted to 21,455,773 barrels or an average of about 692,000 barrels daily. This compares with an output of 16,317,432 barrels in March, 1945, averaging about 526,000 barrels a day.

Czechoslovakia Pipe Line Reported Near Completion

The output of the hydrogenation plant at Most, Czechoslovakia, is being used chiefly to cover the fuel needs of agriculture, according to the foreign press. It is hoped that by the end of 1946 restoration work will be far enough advanced to enable the plant to cover 70 percent of the country's requirements.

The gas pipe line from the plant to Prague is nearing completion.

French Equatorial Africa Oil Prospects Said Good

The Syndicat d'Etudes et de Recherches Petrolieres has completed its geological exploration of the sedimentary layers in the Province of Gabon in French Equatorial Africa, according to reports from Paris. Oil exploitation in the region of Azinga might become a paying proposition, the report points out, provided sufficient financial and material means are made available.

Western Australia Survey

Dr. H. G. Raggatt, director of the Commonwealth Bureau of Geology, Geophysics and Mineral Resources recently stated that prospects of finding oil in commercial quantities in Australia were favorable and the first important survey by his department would be in the Kimberley Basin sector of Western Australia. Traces of oil and bitumen were found in this region in 1919.

Raggatt also said that active field work was progressing in New Guinea.

Pemex Reynosa Offices

Petroleos Mexicanos has taken over an entire building in Reynosa, Mexico, across the Rio Grande River from McAllen, Texas, as a central point for carrying on drilling operations in northern Mexico. The office is staffed with 25 employes.

Kettleman-San Francisco 30-Inch Line Carrying Oil

Standard Oil Company of California's new 18-inch oil pipe line, largest in the state, has completed delivery of its first crude oil cargo from the San Joaquin Valley to the company's Los Medanos tank farm near Pittsburg.

Gathering light-gravity crude from Kettleman Hills and other San Joaquin Valley fields for delivery to the company's Richmond Refinery, the new 176-mile oil line not only is the largest in diameter of any major trunk line in California, but is the state's longest oil line of such large diameter. Built at a cost of $4 million, it has a capacity of 110,000 barrels per day.

Pumps at Coalinga, near Kettleman Hills, began pushing oil into the new line Monday, July 1. At the beginning, oil was moved at the rate of two miles an hour toward its destination, but under normal working pressures, will move at three miles an hour. When filled, the line holds 275,000 barrels of crude, or 2½ times its daily delivery capacity.

Operation of the new line will permit reconversion of the Stanpac line to natural gas. Stanpac, owned by Pacific Gas and Electric Company, Pacific Public Service Company and Standard of California, was switched to crude in the early days of the war because of the tanker shortage and threatened submarine activity off the California coast.

Texas Empire Completes 13 Tanks at Cushing, Okla.

The Texas Empire Pipe Line Company has completed erection of 13 additional 18,000-gallon storage tanks at the company's tank farm south of Cushing, Okla. Built adjacent to The Texas Empire Company station, 2 miles south of Cushing, in Payne County, the 13 new tanks now give the concern storage for an additional 1,240,000 barrels of crude oil.

The total storage for 17 tanks, owned by the company at the Cushing farm, is 1,560,000 barrels. The farm is located along the Gulf Coast-Great Lakes pipeline of Texas Empire and will enable the company to concentrate storage of crude in that vital area.

Sohio's Tinsley Field Line Tests Successfully

Sohio Petroleum Company's new 8-inch, 40-mile pipe lines from the Tinsley field, Yazoo County, Mississippi, to a terminal at Mayersville, on the Mississippi River has been successfully tested and runs are scheduled to begin immediately.

The oil will be barged from the terminal up the river to Sohio's refinery in Ohio. A booster station has been established at Tinsley and two 55,000-barrel storage tanks have been erected at Mayersville. This is the first pipe line outlet for the Tinsley field. Anderson Brothers, Houston construction firm, was the contractor.

Wyoming Line Completed

Hamilton Pipe Line Company has completed a 24-mile, 8-inch crude oil line extending from the Hamilton Dome field, Hot Springs County, Wyoming, to the Elk Basin-Casper line. Standard Oil Company (Indiana) has contracted with Argo Oil Corporation for the purchase of the latter's production in the field.

This outlet is expected to cause several shutin wells to be placed on production and new drilling in the field.

Permit Granted for Two Natural Gas Connections

Two natural gas companies were given authority July 11 to construct new pipe line facilities.

Kentucky Natural Gas Corporation was authorized to build 18 miles of 10¾-inch transmission line from Russellville, Ky., to Mitchellville, Tenn., at a cost of $213,840, for which gas will be furnished by Tennessee Gas and Transmission Company.

Cincinnati Gas Transportation Company was authorized to build 70 miles of 14-inch line from its main line near Foster, Ky., to an interconnection with Tennessee Gas and Transmission Company, near Means, Ky., at a cost of $1,800,000, to move an additional 50 million cubic feet daily of gas to be supplied by Tennessee Gas and Transmission Company for the account of United Fuel Gas Company.

Texas Statewide Hearing

The Texas Railroad Commission will hold its next statewide proration hearing in Austin on July 17. Although above-ground crude stocks have been increasing recently at a rate in excess of 1½ million barrels each week, no cut in nominations is expected. Current reports indicate that the crude products market continues firm.

Lone Grove Line Ready

A 6-mile, 4-inch pipeline, running from the Lone Grove field between Wilson and Ardmore, in Carter County, Oklahoma, to the north end of the old Brock field, recently was completed by the Interstate Oil Pipe Line Company.

Carter Party Chiefs in Conference

Seismograph party chiefs of The Carter Oil Company's exploration department held their annual conference at Tulsa, Oklahoma, to discuss the company's geophysical operations, problems and plans. In the picture, standing, G. E. Wagoner. Front row: E. W. Lemke, C. N. Hurry, A. B. Bryan, Malcolm Riess, G. E. Schultis, C. O. Smith, E. J. Laurent. 2nd row: F. K. Spragins, Marvin Romberg, C. L. Edmonson, Eben Magoffin, Jr., T. W. Ivey, H. W. Stoneman, F. A. Roberts. 3rd row: R. M. Davis, J. R. Harms, P. S. Williams, B. D. Low, G. G. Walton, W. J. Lang. The meeting was attended by 24 party chiefs from various areas in which Carter operates.

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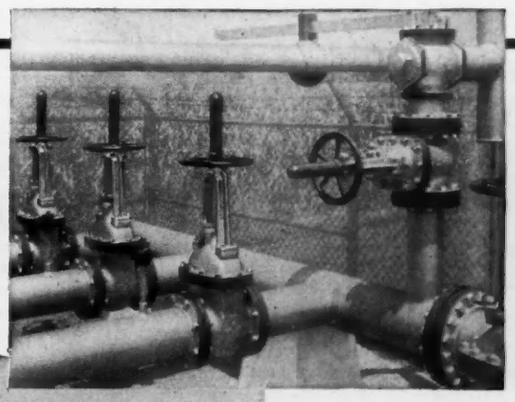

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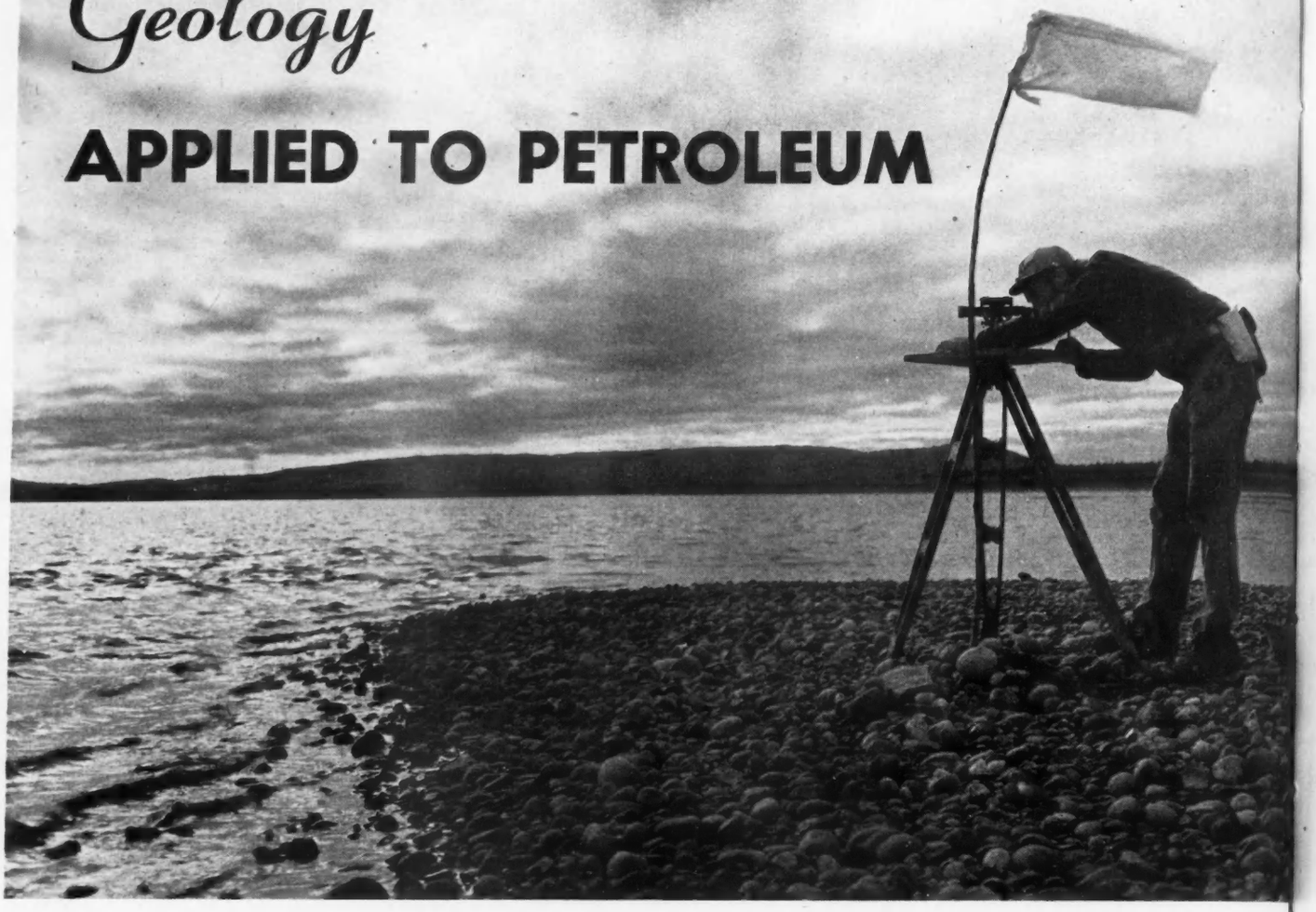

Part 1

Petroleum in the Sedimentary Cycle

By VINCENT C. ILLING
Professor of Geology, Imperial College of Mines and Technology, London, England

IF THERE IS one field of human endeavor more than any other in which geology has played a dominant part, it is in the growth and development of the oil industry. It is a little more than 80 years ago since the Drake well ushered in the modern petroleum industry, and only half of this period since the internal combustion engine led to its phenomenal expansion. It is not too much to say that this expansion could never have been achieved without the services which the geologist has rendered. During the last three decades the oil industry has attracted the bulk of our trained geologists from the Universities. Oil geology has become an important branch of the mother science, with its own problems, its own literature and its own learned societies. The penalty for such progress is as always the need for more specialization. Interest is diverted into particular channels and the problems of special importance to the particular field of view become the orbit of concentrated study and research. The expanding literature in such specialized fields becomes too great for each of us to pretend to cover it with an equal catholicity of taste.

Few geologists outside the oil industry are aware of the deep ramifications of their science into the whole structure of that industry. They know, of course, that the function of geology is to discover new oil fields, but this is only one of the fields of activity of their science in the petroleum world. Its interest ranges from oil discovery to oil recovery. The study of nature's reservoirs was the essential prelude to a clear conception of the appalling underground waste of oil which took place in the early stages of the industry. What was not seen by the oil operator could not be easily appreciated and we owe it largely to the vision of geologists that a restraining hand has been put on this underground waste. In this work the geologist has largely co-operated with the physicist and the engineer, but without the geologist's vision the urgency of the problem would not have been realized.

Interest in Sediments

It could hardly be anticipated that a science devoted to one particular field of endeavor would not be profoundly affected by its own experiences. Oil has had a considerable effect on geology. It has made its own demands and guided the activities of thousands of geologists into certain definite channels, concentrating their atention on branches of their own science where knowledge was often extremely meager. In no field is this more obvious than in the subject of sedimentation. Until recently the sedi-

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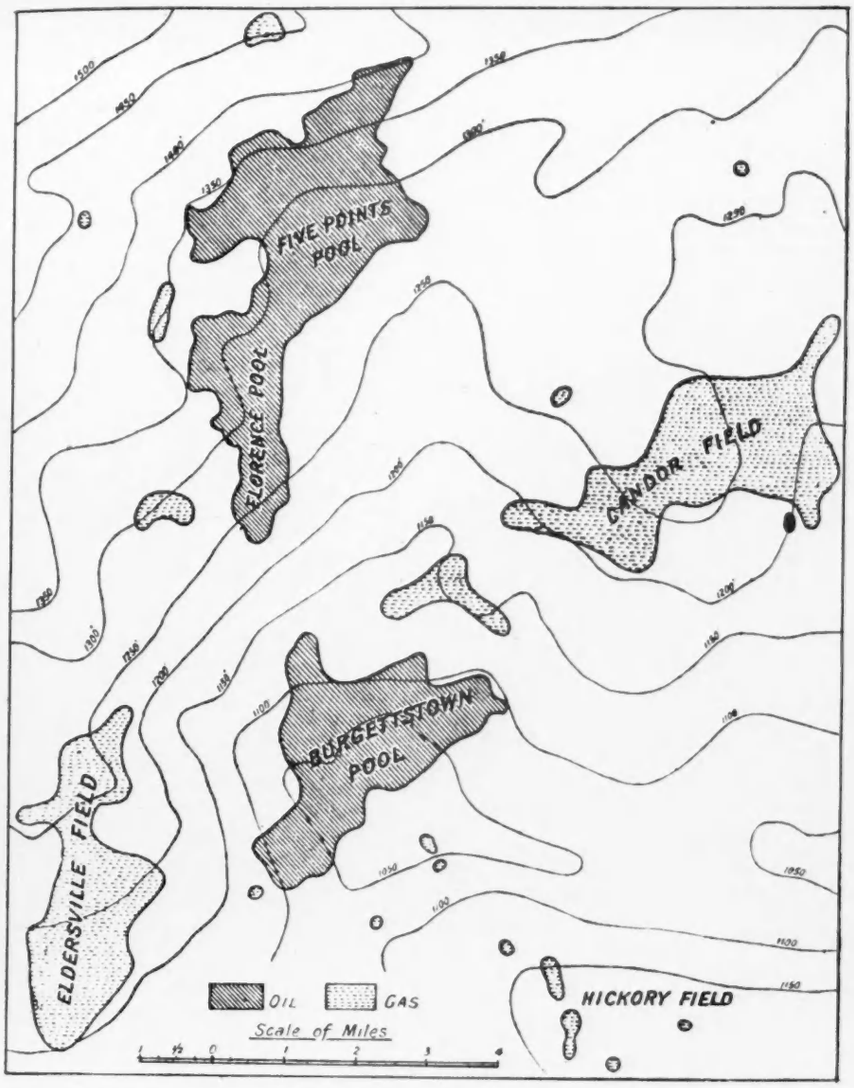

Figure 1. Oil and Gas Pools in the Hundred-Foot Sand in Part of the Burgettstown Quadrangle, Pennsylvania (after E. W. Shaw and M. J. Munn). The stratum contours are drawn on the top of the Hundred-Foot sand and show heights above a datum 2000 feet below sea-level. It will be noted that the general structure is exceedingly flat, the average dip being less than one half of a degree. The boundaries of the oil and gas pools are unrelated to the stratum contours. The general position and form of the Eldersville, Burgettstown and Candor pools are primarily to the distribution of coarse streaks in the main sand body, and their northeast-southwest trend is typical of most of the pools of Pennsylvania.

ments were studied by very few geologists with the same intensity as igneous rocks. They were treated largely as of minor interest, save by a few brilliant workers, and beyond the description of sedimentary rocks and the study of the fossil forms which they contained, the immense field of interest in the natural history of sediments was left almost untouched.

Oil geology is, however, so largely concerned with the study of the sediments that it has led to a re-birth of interest in the processes of sedimentation, compaction and lithification, around which a new literature is rapidly growing. The story of the origin of oil is part of this whole history and we are unlikely to get a true picture of all that pertains to the natural history of petroleum until our studies of sedimentation are more complete.

We are taught that one of the principal functions of geology, if not its main function, is to build up a complete stratigraphical history of the earth's crust. There can be no doubt that a proper basis for the search for oil in any new region is a complete stratigraphical history of that region in all its aspects. The mode of formation of the sediments within the area, the deformation to which they have been subjected, phases of erosion which may have interrupted their deposition and led to the dispersion of the oil and gas which were entombed in the deposits, must each and all receive their due emphasis. Only by such studies can we get an assessment of the quantity of oil which is likely to be still stored within the rocks below.

Furthermore, the structure of the area must be portrayed with exactitude. It is not sufficient that this should be done by a geological map with diagrammatic sections. Everything must be measured and the accuracy of the three-dimensional picture of the whole structure is the only thing that counts. This becomes apparent when we realize that the oil geologist's solution is usually put to the most searching of all tests, the test of a bore-hole. His general mapping may be correct and his interpretation may pass muster, but unless his data lead to accurate prophecies of the formations which will be met in depth, his work will receive little commendation. This is the most stringent test of a structural theory. It needs good mapping, painstaking observation, an endless patience in the accumulation of data and a sound structural sense to build up the full picture.

The result has been a new emphasis on accuracy in structure portrayal, the careful measurement of strata, detailed knowledge of changing thicknesses, conditions of overlap and overstep, the effects of different elasticity of rocks on structural forms. All the factors which may have a bearing on strucural interpretations—it may be a mile or two miles underground—become the essential data for his picture. Lack of evidence is no excuse if such data can be made available by any means whatever, and the oil geologist soon learns to appreciate that if exposures are poor he must resort to artificial excavations, borings or geophysical methods to obtain his evidence. The result has been the perfection of a large number of new exploratory tools and the process of their development has led to a closer co-operation between the geologist, the physicist and the engineer. In no branch of our science is collaboration with other sciences and with engineering so widespread as in oil geology. A good instance is the great expansion of geophysics which is now used as an essential tool by the oil geologist to supplement his own methods of approach when a more complete picture of earth structure can be obtained by such means.

Oil Discovery

Petroleum in the Sedimentary Cycle:

The search for petroleum cannot be put on a scientific basis unless we have a working hypothesis for the principal factors governing its mode of origin and accumulation. Unfortunately petroleum itself is not an easy substance to define. It varies in its physical properties from a gas to a liquid and from a liquid to a solid. Chemically its constitution may consist of large numbers of different hydrocarbons to which may be added other simple and complex organic compounds. Probably the best definition is implied in the derivation of its name. In its liquid form it is an oil found in the rocks of the earth's crust and it is this association which is the only simple single character by which it can be defined. What petroleum is doing in the rocks, whence it came, and why it remains concentrated in bulk in certain selected spots, is obviously a story within the history of the rocks themselves and it is, therefore, only natural that geologists should take upon themselves the study of the life history of this substance in order to search for it with greater efficiency.

Origin Of Petroleum

If a discussion on the origin of petroleum becomes enmeshed in a consideration of its chemical constitution, the problem is liable to get lost in a whole series of endless possibilities. There are so many ways by which it is possible to explain the formation of hydrocarbons in nature that the very wealth of choice becomes a hindrance to the solution. The literature on the origin of petroleum has suffered considerably on this account. Fundamentally the problem is geological rather than chemical. The very varied nature of the material

makes it difficult to approach the subject from a chemical standpoint, but the fact that petroleum has its home in the rocks makes it possible for the geologist by studying the conditions of its occurrence, to obtain the first clues as to the limiting factors which govern its origin and accumulation. If, for instance, it had been laid down, as it might have been, that no theory on the origin of petroleum was admissible unless it explained the close association between oil and sediments, most of the chemical theories on its origin would never have been put forward. Furthermore, had it been clear from the beginning that the environment in which oil is produced had not suffered in a high degree from metamorphism, it is doubtful whether the theory that oil was the product of the heat metamorphism of sediments would have gained so wide a currency. Both of these features are gradually being accepted by oil geologists as the basis of any possible theory of the origin of petroleum.

Cycle of Sedimentation

Oil is something which is born in a cycle of sedimentation. When and how it is born is not quiet clear, but it is not due to abnormal accessory circumstances such as igneous activity. Furthermore, and here perhaps the thesis is not quite so widely accepted, petroleum is a natural and a common substance in a sedimentary cycle. It is not some freak material requiring for its formation peculiar and unusual physical conditions. That it requires certain definite conditions is undoubted, but the more the extent of petroleum occurrence is studied the firmer is the conviction that petroleum source rocks, i.e., the mother rocks from which the oil is produced, are formed in environments which occur quite commonly and particularly in a cycle of marine deposition on the continental shelf. These oil source rocks are predominantly clays. Their colors are normally dull, grey to black, and they probably represent conditions of deposition wherein the water was largely free from oxygen. Such conditions as lead to many of the black muds on the continental shelf seem in general to fit in with this requirement, and there are probably in the geological column of the British Isles a considerable number of such formations which in their time were effective oil source rocks, the black shales of the Lower Paleozoic, many shales of the Carboniferous, the Lias, the Upper Jurassic shales of the Lower Cretaceous. It is not suggested that such dark shales and muds represent the only possible source rock. In some instances it would appear that marls and limestones represent effective substitutes; the sole feature which appears to be common to them all, being the deposition of organic matter in an environment wherein the lack of oxygen prevents its complete decay and dispersal.

It is quite possible that under certain conditions in deep, fresh-water lakes, in the continental areas, the organic matter might be similarly preserved, and there appears to be no reason why in such cases an effective oil source rock should not be formed. However, as the necessary anaerobic environment is far more commonly produced in the depressions on the sea floor, there is in this factor a satisfactory explanation why it is the common experience that oil is more definitely associated with marine conditions than with any others.

It was claimed above that there was no necessity for oil source rocks to be peculiarly rich in spite of the fact that where oil is found it may form a high percentage of the enclosing sediment. This is explained by the fact that the mobility of petroleum allows it to move through the strata wherever they are sufficiently permeable to allow such passage. There is no doubt that one of the earliest and most important processes in oil accumulation is the migratory movement of the liquids and gases through the strata, produced by the movements of the connate fluids during the stages of compaction. This is carried on further in the later stages when the rocks are completely compacted by movement through the more porous sediments such as sands and limestones in association with the movements of underground waters. These processes of migration are of extreme importance, firstly in directing the oil and gas into the porous reservoir rocks, and secondly in the distrainment of these materials from the connate waters whereby the oil and gas become entrapped in the coarser rocks. The physical explanation of this trapping process is too large a subject in itself to be adequately discussed here, but the essential factors in the process are the tendency, firstly for the gas and the oil, being lighter than the water, to select for themselves those paths in the migrating fluids which are the most upward, and secondly for the oil and gas to be distrained or held back at all points where the migrating fluids pass from a coarse rock to a fine one.

This latter process is one of filtration similar to the effect of a water-wet gauge which is able to filter and hold back oil from an oil-water mixture.[1] The ultimate results of these two processes lead to the concentration of oil and gas in the coarser portions of the strata, and though migrating fluids may contain but a small percentage of this oil and gas, they are themselves in such large bulk that the withdrawal and concentration of this small percentage in certain parts of the strata can lead to very considerable accumulations. Thus a widespread and thick source rock which may not itself be rich in organic contents and may not, therefore, contain a large percentage of oil, can in spite of this produce large local concentrations of such material by virture of these migratory and segregational influences. These are the petroleum accumulations which are found in nature.

Effects of Diastrophism

Unfortunately an oil accumulation trapped within the rocks is not automatically protected from further phases of migration. The effects of diastrophism or of deep-seated weathering may induce new movements of the fluid contents of the crust, and should the agents imprisoning the oil be overcome, a new phase of oil and gas movement will ensue. (These deep-seated weathering processes must not be confused with normal weathering. They refer to the adjustments of the aquifers in the crust to the processes of denudation and may extend several thousand feet below the surface.) Most of the surface seepages of petroleum are examples of this dispersion, and should it be carried to completion the oil accumulation will be lost. Thus, rightly construed, a surface showing of petroleum is but a renewed phase of oil migration which is leading to the ultimate loss of the underground accumulation, and although it is true that many oil fields have been discovered as a result of such seepages it is also none the less true that such surface indications are not infallible guides to the occurrence of worthwhile accumulations in the rocks below. This process of oil dispersal has undoubtedly taken place on a vast scale in the past history of the earth's crust; in fact, the oil fields which we now have are in the main only such accumulations as have escaped the dispersal influences. Many of them owe their preservation to the fact that geologically they have been accumulated so recently that the influences tending to their dispersion have not yet had time to remove them from the earth's crust. It is significant in this respect that our younger oil fields are far more commonly associated with surface seepages than the older ones. The latter have already been subjected to the processes of dispersion and only those which are covered with an exceedingly effective seal have been preserved.

Thus it is seen that the problem which faces the geologist in an assessment of the possibility of finding commercial supplies of petroleum is not only the extent of the source rocks which have been laid down in the area and of the processes of accumulation in the neighboring rocks, but also there is the additional difficulty which arises from this tendency of oil to disperse. It involves a careful study of the ensuing stratigraphical history following these processes of oil accumulation in order to determine whether the accumulations *already* formed in the earth's crust have had a reasonable chance of survival. This latter problem is generally the more difficult of the two, particularly when dealing with the older formations. For instance, the decision whether Great Britain would be a fruitful field for oil exploitation could not rightly be based on the showings of oil or on the existence of source rocks. The real problem was the chance of survival of sufficient oil to justify the search.

Accumulation of Oil

Loking back over the past 80 years of the petroleum industry's growth, one sees a gradual change in the methods of oil discovery. Some of this is due to the fact that all the shallow fields which are easy to discover have probably been tapped save in some regions of the world which are relatively inaccessible, and more and more the search for oil is leading to deeper drilling and therefore greater risks.

In spite of these difficulties, however, the rate of oil discovery has not diminished; in fact, at no time in the world's history have more new fields been found than in the last two decades. The success achieved has been largely due firstly to the application of more elaborate theories of oil accumulation and the intensity of geological effort in their application, and secondly to the great achievements of engineering in the processes of drilling whereby the effective depth of economic drilling has been increased to over 10,000 feet and thirdly to the use of new weapons which have been used to aid the geologist in discovering underground structures.

In the early days of the oil industry most areas were searched on the basis of their surface oil shows. The wells were not deep and often those responsi-

■ CONTINUED ON PAGE 42

Baash-Ross News

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Pennsylvania Air-Injection Projects

Extensive experimental work seeks to show the feasibility of utilizing reservoir energy

By BRUCE F. GRANT, Petroleum Engineer, Bureau of Mines, Petroleum Field Office, Franklin, Pa.*
and
ROBERT B. BOSSLER, Petroleum Engineer, Brundred Oil Corporation Oil City, Pa., and Consulting Petroleum Engineer for Bureau of Mines, Oil City, Pa.

EXPERIMENTAL work has been in progress for the past two and a half years to determine the feasibility of utilizing the reservoir energy created by air or gas injection to flow the oil from producing wells on secondary recovery projects in the Venango County, Pa., district.

Although similar work has been done previously in other areas,[1,2,3] the experimental conversion of producing wells from pumping to flowing in this area was started in August, 1943, by the Brundred Oil Corporation, Oil City, Pa., on one of its air-injection projects in the Oil City field. The assistance of the Petroleum Field Office of the Federal Bureau of Mines, Franklin, Pa., was requested in January, 1944, and a detailed engineering report covering the work will be published at a later date. The purpose of this article is to meet the more immediate need for general information on the work being done and to supplement the brief articles[4,5] that have appeared to date.

More recently, other operators have undertaken flowing experiments, and at present information is being collected on the behavior of 77 wells which have been equipped with flowstrings by seven companies on 18 air-injection projects in this area. These data are being studied to determine the proper design and operating limits of equipment for flowing the wells and to evaluate the effect of flowing on the production characteristics of the reservoir and the operation as a whole.

On these projects oil is produced from the Venango sands (Upper Devonian) at depths ranging from 300 to 1000 feet, and daily oil-production rates range from 0.1 to 2.5 barrels per well, with produced gas-oil ratios varying from 1000 to well above 10,000 cubic feet per barrel of oil. On these and other air-injection projects in the area, operating expense per barrel of oil produced by conventional methods is high, and the necessary maintenance of pumping equipment accounts for a large part of this expense.

It was believed that converting the producing wells from pumping to flowing would offer the possibility of reducing these operating costs and at the same time might result in decreased "by-passing" of the injected medium, which would result in more efficient recovery. These advantages may follow the conversion of wells from pumping to flowing provided that:

1. Enough pressure can be established and maintained in the reservoir by air or gas injection to cause the wells to flow.
2. The design and installation of flowstrings can be made practicable for the range of conditions found on a particular property.
3. Oil-production rates to be expected

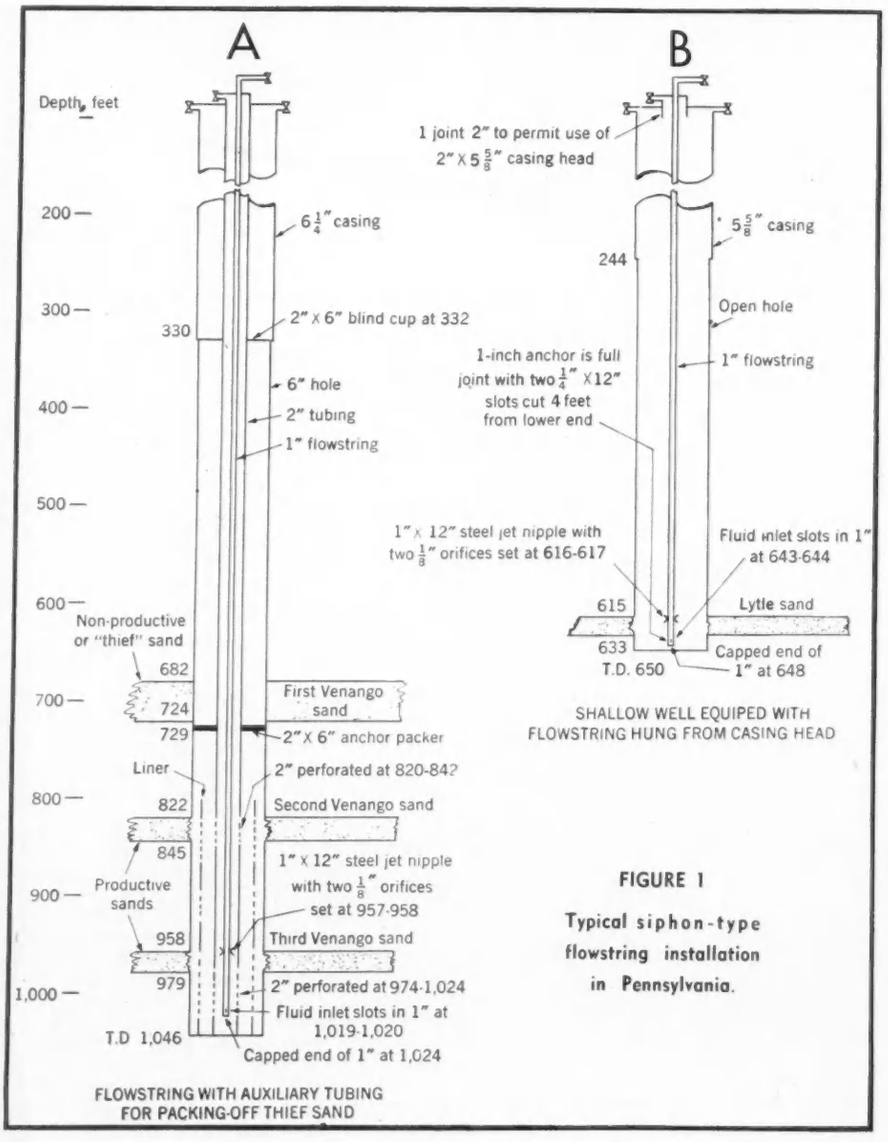

FIGURE 1

Typical siphon-type flowstring installation in Pennsylvania.

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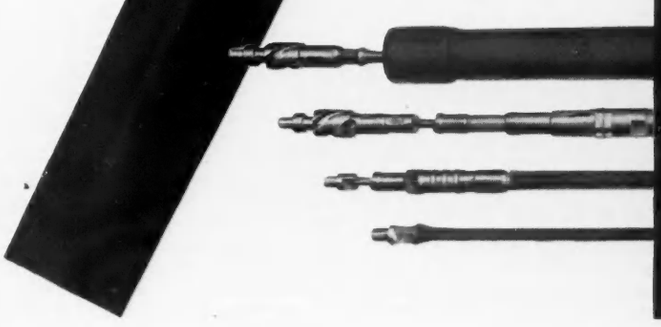


AXELSON SUCKER RODS AND DEEP WELL PLUNGER PUMPS

THERE IS NO ECONOMICAL SUBSTITUTE FOR QUALITY

from flowing the wells are not materially less than those obtained by pumping the wells.

4. Flowing the wells will lower operating costs sufficiently to repay the costs of converting the wells from pumping to flowing.

The first of these provisions is that the physical energy of the gas produced with the oil from each well must be enough to lift the fluid production to the surface. The physical energy of the gas depends on both its volume and pressure. Thus, if the shut-in pressure of a producing well exceeds the pressure required to flow, and if, at a back pressure equivalent to the expected flowing pressure, the well produces enough gas to lift its fluid, then the well may be expected to flow when equipped with a properly designed flowstring. The theoretical pressure distribution between an input and a producing well on a gas-injection project is such that over half of the total pressure drop between input and producer takes place within 10 to 20 feet around the producing well. By closing in producing wells shut-in pressures have resulted which often exceed 50 percent of the input pressures. In more permeable sands where the injection pressures are less than the expected flowing pressure, a period of pressure restoration will be necessary to bring about flowing conditions. Such an experiment is planned on a lease in the Venango area to determine the feasibility and economics of increasing the average sand pressure by 100 pounds per square inch in order to allow the wells to flow. The pressure required to flow a well varies widely, depending on depth, oil, water, and gas-production rates and diameter and design of flowstring, but the performance of wells studies indicates that the minimum pressure for continuous flow is approximately 8 to 10 pounds per square inch per 100 feet of depth. The "kickoff" pressures required in intermittently flowing wells (flowing by heads) are dependent on relative gas and fluid production rates and flowstring design rather than on well depth but appear to fall within a range of 10 to 15 pounds per square inch per 100 feet of depth.

Flowstring Design

The correct design of a flowstring involves consideration of a number of variables, such as depth, shut-in pressure, and rates of gas and liquid production. To lift the comparatively small daily oil and water output of wells in this area, several flowstring designs have been tried, and data are being obtained on experimental installations to define the various factors that affect their design and installation. The fact that injected and produced gas-liquid ratios are usually above 2000 cubic feet per barrel makes it unnecessary to design flowstrings for maximum lifting efficiency. This permits the use of a simple, uniform design for a wide variety of conditions. However, well performance data have indicated that it is desirable to design the flowstring so that the well flows by heads, or intermittently rather than continuously, because paraffin deposition is less and in some cases increased oil production at decreased gas-liquid ratios is obtained when wells that had been flowing continuously are made to flow intermittently. This desirable effect is attributed to the high pressure drop from the reservoir to the well bore during the low-pressure cycle of intermittent flow.

The type of flowstring that has proved widely applicable to wells in the Venango County area is illustrated in Figure 1 (A and B). It is similar in design to the commonly used gas-well siphon.[6] Fuid inlet slots are milled into the bottom joint of the flow string about 5 feet from the capped end, and a "jet nipple" with two ⅛-inch orifices is placed some 20 to 40 feet above the fluid inlets. Figure 1(A) shows a 1-inch flowstring run with an auxiliary string of 2-inch pipe having a packer placed to shut off a barren, thief sand in the open hole above the two productive sands. Flowstrings have been installed as shown in (B) in wells having no thief sands, although in wells over 1000 feet deep an auxiliary string of 2-inch tubing should be run when flowstrings 1 inch or smaller are used to guard against expensive fishing jobs should the flowstring be dropped.

High Pressure Difficulties

Although the relation of operating limits to the length and diameter of siphon-type flowstrings is not clearly defined by work to date, 1-inch siphons are satisfactorily flowing 0.1 to 2.5 barrels of liquid (oil and water) daily from wells 700 to 1000 feet deep at gas-liquid ratios ranging up to about 8000 cubic feet per barrel (daily gas production rates up to 15,000 cubic feet under some conditions). For higher gas-production rates, or higher gas-liquid ratios such as are encountered in badly by-passed wells, intermittent flow can be achieved only through the use of larger-diameter (1¼ or 1½-inch) pipe or combination strings of 1-inch and 2-inch pipe where the ratio of the lengths of each diameter is adjusted according to the capacity of the well. Experience has shown that wells flowing at gas-liquid ratios below 5000 cubic feet per barrel perform most satisfactorily and require the least attention. Designing flowstrings for the control of by-passing or high-ratio producing wells is more difficult, and stop-cocking may prove to be the most practical method of handling wells of this type.

Of the wells so far equipped with flowstrings, 58 have 1-inch siphons, 6 have 1¼-inch, and 5 wells are flowing with combination or tapered strings of 1-inch and 2-inch pipe. One well is equipped with a conventional open-end string of 1-inch having no jets, and 8 wells are equipped with modified chamber lifts so that they may be either air-lifted or allowed to flow themselves.

Data comparing oil-, water- and gas-production rates before and after conversion from pumping to flowing are available for individual wells on only a few leases. Oil-production rates of a few wells have been slightly less by flowing than when pumping, while oil-production rates of the other wells have been either unchanged or increased by flowing. Marked decreases in produced gas-liquid ratios as a result of flowing were noted where comparative data were available. At present these indicated results cannot be applied beyond the boundaries of the leases on which they were obtained, but they do provide the incentive for further experimental work.

Most of the data on the operating problems and economic results of flowing are based on a group of 24 flowing wells on one air-injection project, because the work on other leases has been confined to experimental installation of flowstrings in only one or two wells on each lease. On this project continuous production records have been kept for a 20-month period on a group of 16 flowing wells. During the 20 months only four pulling jobs have been necessary to repair or change flowstrings in the 16 wells, and this is a marked reduction in well pulling expense on the lease.

During the course of experimentation, failures have occurred, and several problems have arisen. For example, wells have failed to flow when the shut-in pressure was insufficient for flow and it was inadvisable to increase the pressure on offsetting injection wells, or where irregular operation of injection wells precluded the possibility of increasing the average sand pressure. Some of the problems that have developed in operating flowing wells are:

1. The control of badly "channeled" producing wells having excessive gas-fluid ratios.
2. The creation of water-in-oil emulsion in flowing the more viscous crude oils.
3. The formation of paraffin deposits in the flowstring.
4. The need for occasional air-lifting to kick off "dead" wells.

Although neither paraffin nor emulsion have proved serious so far, the extent to which they would affect wells in other areas is unknown.

Because the unsuccessful conversion of producing wells from pumping to flowing is limited to a few properties in this area, the feasibility of flowing other projects is necessarily judged by their similarity to the leases where flowing has been successful. To roughly appraise the possibilities of flowing the wells on a particular gas-injection property, the following information on the lease is necessary:

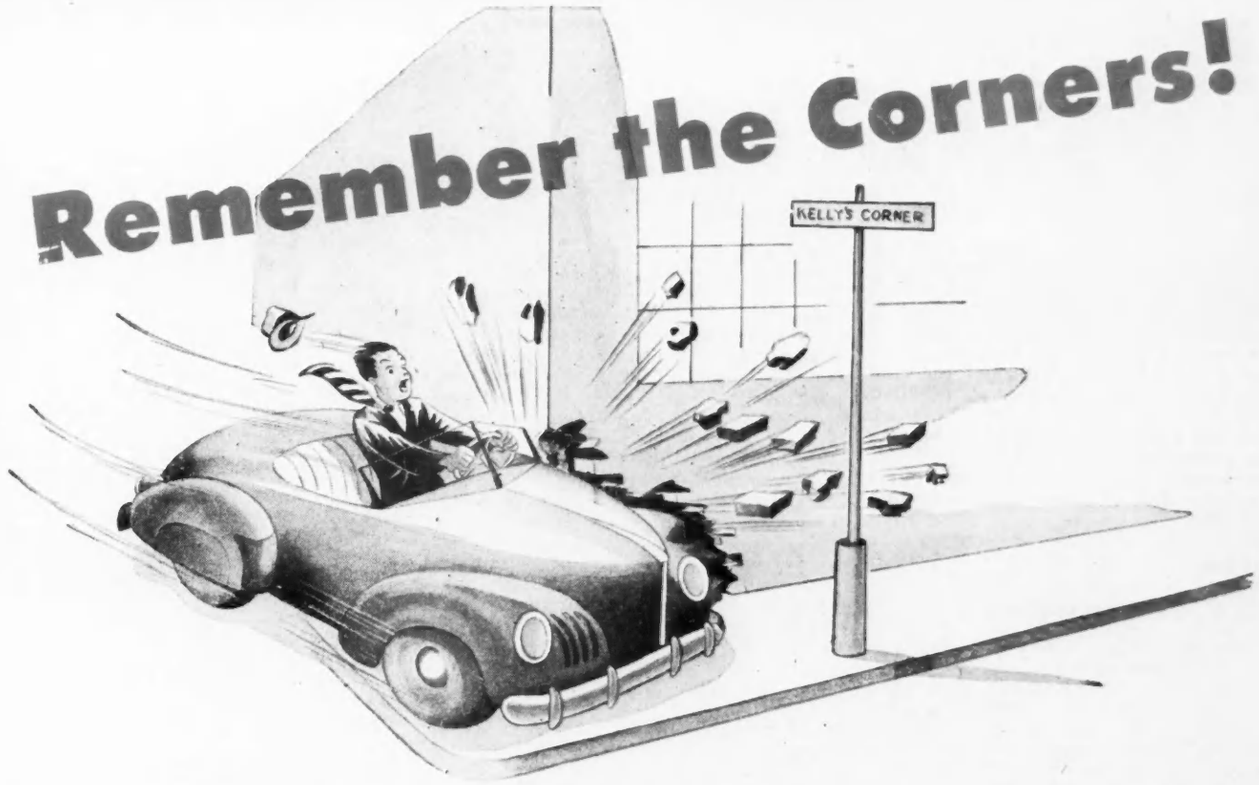
Lease Information Needed

1. Location, depth, and spacing of wells.
2. Pressure and volume of gas injected into each input well or zone.
3. Twenty-four hour shut-in pressures of all producing wells.
4. Oil-, water- and gas-production rates of each producing well.
5. Core analyses of producing sand, if available.
6. Representative well-completion data on input and producing wells.

The first four items provide information on the injection operations and the probable pressures and volumes available for flowing. If flowing is contemplated, there must be stabilized injection to the sand through an adequate number of input wells so distributed as to leave no low-pressure areas in which wells will not flow, as no important decrease in operating costs can be expected if central pumping equipment must be maintained for part of the producing wells on a lease. If these operating data on the project conform to the general conditions previously outlined, it may be possible for the producing wells to flow their production. Flowstrings are designed on the basis of gas and liquid production rates of the wells, their logs and completion data.

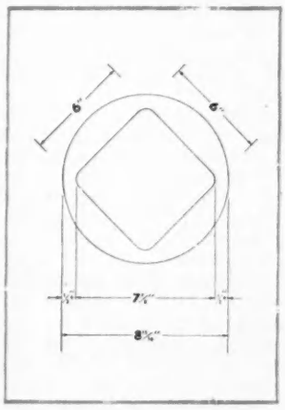
The effect of flowing the producing wells is known quantitatively on so few air-injection properties that conversion of wells to flowing on other leases

Remember the Corners!



NO DRIVER CUTS A CORNER unless his car whips out of control. No Kelly corner dashes holes in casing unless it is allowed to whip. Both accidents occur because someone forgot how far corners stick out.

Operators using Patterson-Ballagh Kelly sub Stabilizers to control the whip of their Kellys have saved many thousands of dollars in potential casing and grief stem trouble. They *remember the corners* when selecting the correct sub Stablizer to fit their particular Kelly and casing combination.



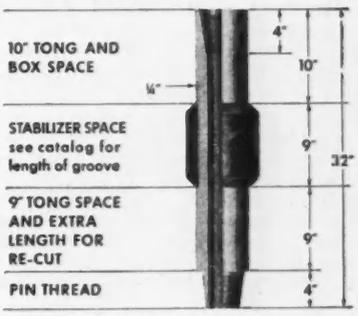
Installation dimensions of a Stabilizer, Code: MIMOSA.

"REMEMBER THE CORNERS" for complete protection. Every Kelly corner should always be protected by at least ½ inch of rubber. For example, the greatest diagonal distance between the corners of a 6 inch square Kelly is 7⅛ inches. This requires a Stabilizer 8⅞" O.D. when installed to give ½ inch of rubber protection on opposite corners. The Patterson-Ballagh Stabilizer, code: MIMOSA, having an 8 15/16" installed O.D. would be recommended in this case, assuming that the Kelly sub has a diameter of 7¾" and is grooved to 7¼".

Always use a Stabilizer with at least 1 inch greater installed O.D. than the longest diagonal dimension across the corners.

SECTIONAL VIEW OF KELLY SUB WITH PATTERSON-BALLAGH STABILIZER

SUGGESTED MINIMUM DIMENSIONS FOR KELLY SUB AND ALLOWANCES FOR TONGS AND THREADS.



LEAVE ROOM ON EACH SIDE OF STABILIZER GROOVE FOR TONGS, AND RE-CUT OF THREADS

The drawing above shows suggested minimum dimensions for Kelly sub Stabilizer installations. Patterson-Ballagh engineers have designed, specified, and coded Stabilizers and Protectors for over 700 possible combinations of Kelly and casing sizes now in use. Your Patterson-Ballagh man will give you complete information for getting the *longest wear and best results in your set up*. Proper Kelly stabilization pays big dividends.

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should, as a first step, be confined to a few wells grouped to serve both as a pilot operation and, if results are favorable, as a nucleus for expansion. The planning, installation, and operation of these experimental groups preferably should be under engineering supervision so as to develop the maximum amount of information as to the physical and economic comparison between flowing and pumping.

These studies by the Bureau of Mines will be continued and extended to other local air-gas injection projects where operators are interested in determining whether the reservoir energy created by the injected air or gas is sufficient, after having moved the fluid through the sand into the producing wells, to lift that fluid to the surface and into the stock tank. As a method of operation, flowing the producing wells, together with the best possible injection techniques, offers the possibility of lower operating costs and more efficient recovery of oil from air or gas injection projects in the Venango County district.

Acknowledgments

The work upon which this paper is based was conducted by the Bureau of Mines under a cooperative agreement with the Pennsylvania Grade Crude Oil Association. The studies were made under the general supervision of R. A. Cattell, chief, Petroleum and Natural Gas Division, Bureau of Mines, Washington, D. C., and under the direct supervision of C. J. Wilhelm, former supervising engineer, Bureau of Mines Petroleum Field Office, Franklin, Pa., and now in charge of primary production engineering at the Petroleum Experiment Station, Bartlesville, Okla., and Sam S. Taylor, supervising engineer, Bureau of Mines Petroleum Field Office, Franklin, Pa.

The cooperation of W. J. Brundred, president, and the office and field personnel of Brundred Oil Corporation in the field tests is gratefully acknowledged. The cooperation also of the officials and personnel of eight other local oil companies during these studies is greatly appreciated.

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The illustration was prepared by the Graphic Services Section, Central Experiment Station, Bureau of Mines, Pittsburgh, Pa.

REFERENCES

[1] Schlater, K. C., Wells in Old Field Produce Through Small Tapered Tubing, Petroleum Engineer, April, 1932, p. 14.

[2] Albright, J. C., Repressuring Eastern Kentucky Area Makes Old Pumpers Flow, Oil Weekly, February 26, 1932, p. 25.

[3] Smith, Lawrence E., Restoring Pressure in Old Texas Field Flows Wells Regularly, National Petroleum News, November 7, 1928, p. 27.

[4] Bossler, R. B., Flowing Producing Wells in Secondary Recovery, Independent Monthly, May, 1944, Reprinted in Producers Monthly, May, 1944, Petroleum Engineer, Reference Annual, July 1, 1944, p. 130.

[5] Installation Used in Flowing Repressured Air-Gas Wells by Means of Reservoir Pressure, Producers Monthly, October, 1944, p. 11.

[6] Williams, I. B., Brandenthaler, R. R. and Walker, Morgan, Design and Operation of Gas Well Siphons, Bureau of Mines Tech. Paper 460, 1929, 45 pp., 12 figs.

Geology and Petroleum

• CONTINUED FROM PAGE 36

ble for choosing the drilling site were guided by considerations which would receive little support nowadays. The percentage of failures was sometimes very large, but the costs of such shallow wells were small and failures were offset by the profitable nature of the successful drilling. In such areas as Pennsylvania, where the rocks were practically horizontal and the structures so indefinite that they could only be portrayed by stratum contour maps, the dominant factors which decided the oil accumulation were lithological rather than structural, and as it was impossible for the geologist to say with any certainty where the coarser zones would occure underground he could be of little help in the search for new pools. (Figure 1.) Yet it is curious that it was in this area as well as the relatively horizontal structures of Ohio and Indiana that the anticlinal theory was born. Both Sterry Hunt[2] and Andrews[3] promulgated in 1861 the anticlinal theory of oil accumulation, but their conceptions were quite different.

Hunt and Andrews

To Sterry Hunt the truth of the anticlinal theory was based on the assumption that as gas and oil were lighter than water, they would float on top of the water zone in the more porous strata. It may be added that this is the basis of the modern anticlinal theory, though it needs some modification in the genesis of the accumulations where the porous rocks are too fine to allow static separation of gas and oil over water. Andrews, on the other hand, considered that anticlines were favorable structures for oil accumulation by virtue of the tendency for such structures to be more fissured and therefore more porous and permeable. This conception has been echoed by many observers in different countries who have believed that oil accumulations were zones of fissured rocks. The idea was further supported in such areas as Baku by the discovery of contiguous wells, some of which were highly productive, while their neighbors produced nothing. It was suggested in these early days that this was due to the fact that the fortunate wells had entered underground fissures or cavities, whereas the others had failed to find the permeable zones. While there can be no doubt that Sterry Hunt's conception was in the main the basis of the modern anticlinal theory, it may be added in parenthesis that Andrews' idea had more than a grain of truth. There are many fields in the world, particularly in limestone areas, where the rock has little porosity. In these the fissuring of the formations appears to be the sole factor in determining good oil production and in such cases Andrews' theory comes into its own. However, it could not be applied with any justification to the older Paleozoic fields of the United States, which at the time of Andrews' statement were the sole oil producers.

Until the beginning of the present century Pennsylvania and Ohio were the only important areas of oil production in the United States. In Europe the Caucasian Belt, Roumania and the Carpathians formed the other oil fields of the world and in these the anticlinal theory was accepted and applied with considerable success. In America its acceptance was by no means so universal, and when it was re-stated with great clarity and force by David White[4] in 1884, it was determinedly opposed by Lesley, the director of the Second Pennsylvania Geological Survey.

Now that we are able to survey the data on which this controversy was based, it is only fair to the memory of Lesley to admit that there was considerable justification for the standpoint which he took up at the time, that the oil pools of the Pennsylvania region did not support the anticlinal theory. When, however, the trend of oil discovery broadened the experience of oil geologists it was soon realized that no single theory of oil accumulation could pretend to cover the extraordinary variety of structures in which oil and gas could be found. Each region tended to present peculiarities of its own. Oil pools could be found in anticlines and synclines, in horizontal and in inclined strata, in faults and in unconformities. The factors which governed each accumulation were varied but all of them had this one feature in common, that the reservoir rock must be porous and permeable and must be enclosed in an envelope impermeable to the escape of the oil and gas. This led to the conception of the reservoir as a zone in which the oil and gas had been trapped and a fruitful set of theories were evolved to explain the physical principles by which this could be achieved. Theories of oil accumulations became freed from the earlier conception of static separation of gas, oil and water into layers of different density and it became clear that most oil accumulations were the products of lateral and vertical currents of water which flushed the gas and oil into parts of the reservoir rock where it was temporarily trapped.

The function of the oil geologist was to study this process of oil trapping and it was not long before it was realized that a mere emphasis on structure was not enough. Soon the process of oil discovery became enlarged into a study of the whole stratigraphic history of the sedimentary basins involving considerations which were colored as largely by the conditions of deposition as by the later structures.

To attempt to crystallize all this knowledge into a classified series of oil field structures defeats its own object. It implies that in each pool one important structural feature has determined the oil accumulation. This is true of only a few fields; more often than not the pool is due to several features, partly lithological and partly structural working in combination. For this reason the writer proposes to segregate the various groups of oil pools according to the general regional structures in which they occur. This treatment has the merit of avoiding the pitfalls of attributing particular pools to simple origins when their cause is complex and also it has the advantage that it draws attention to the normal grouping of factors which tend to work in combination in areas of particular structure.

Part II will appear in an early issue.

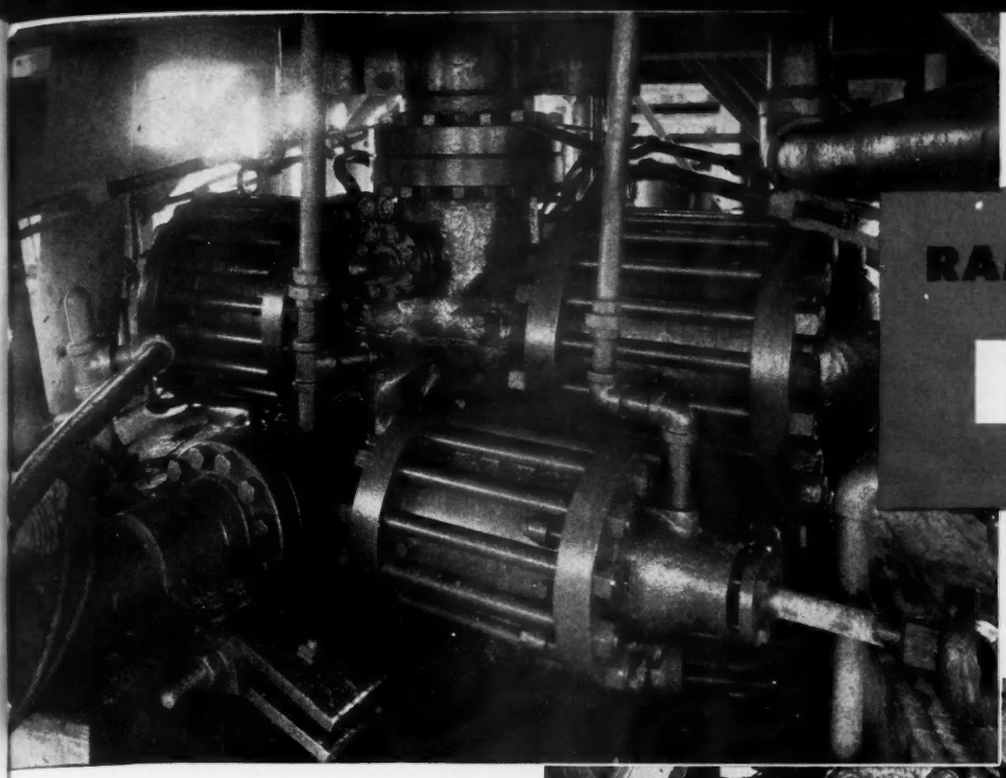
REFERENCES

[1] Illing, V. C., 1933. "The Migration of Oil and Gas" Journ. Inst. Tech., **19**, pp. 229-50. 1939. "Some Factors in Oil Accumulation," Journ. Inst. Tech., **25**, pp. 201-225.

[2] Hunt, T. S., 1861. Notes on the History of Petroleum or Rock-Oil. Canadian Naturalist, **6**, pp. 241-245.

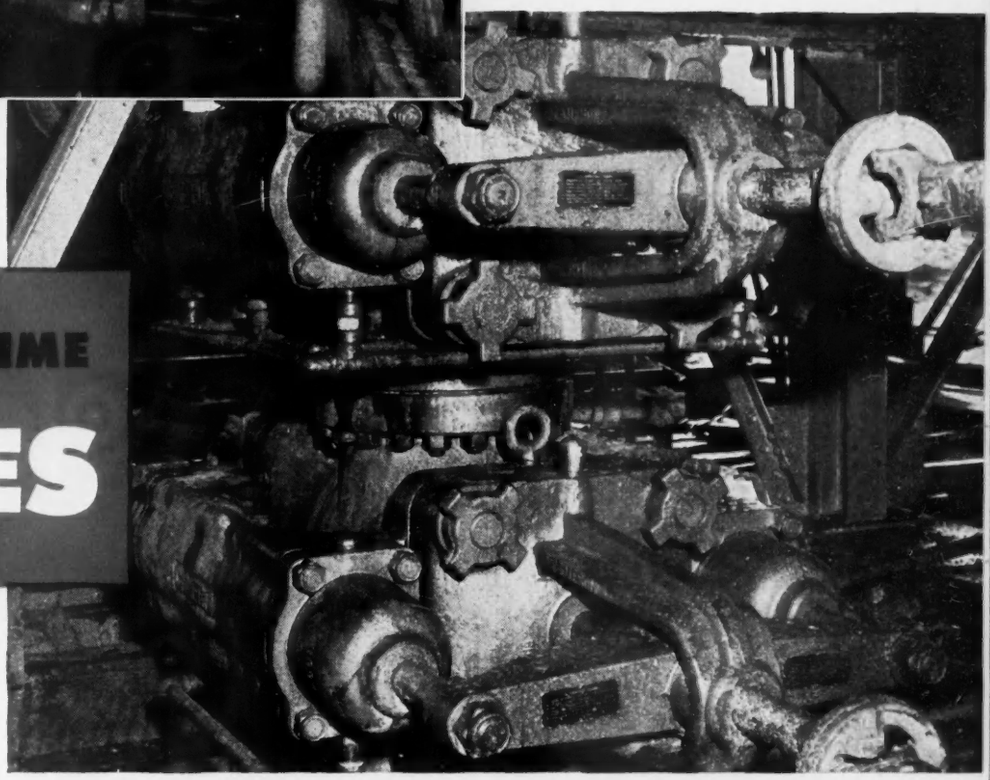
[3] Andrews, E. B., 1861. Rock-Oil, Its Geological Relations and Distribution. Amer. Journ. Sci., (2) **32**, pp. 85-93.

[4] White, I. C., 1885. The Geology of Natural Gas, Science, **5**, pp. 521-522.



RAM CHANGE TIME

HOURS



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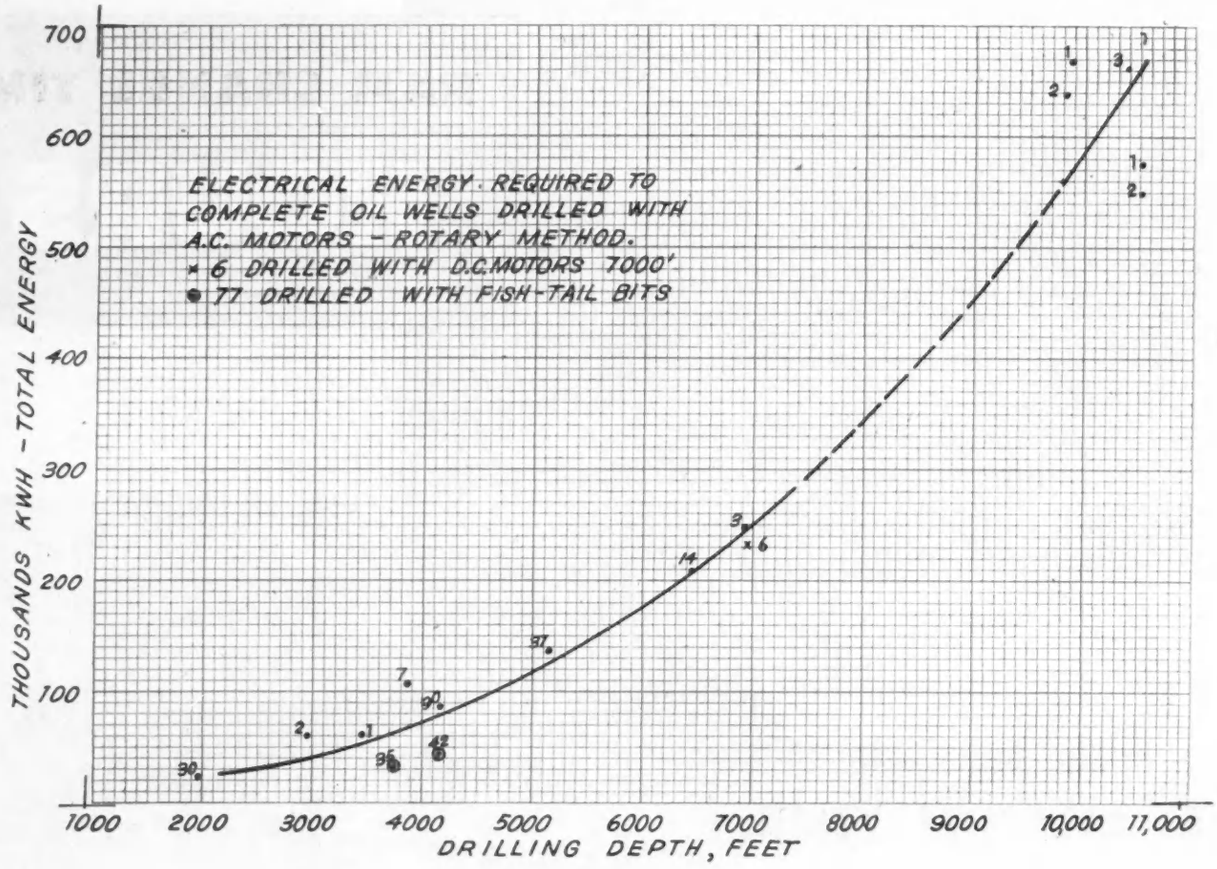

FIGURE 1

Electric Power FOR THE Oil Industry

By W. H. STUEVE, Chief Industrial Consultant
Oklahoma Gas and Electric Company, Oklahoma City

THE petroleum industry, through its various phases of operation, uses vast amounts of electric power, some of which is generated on the oil companies' own premises and some purchased from existing utilities. The oil industry is essentially a pumping industry and requires the use of a variety of pumps, and for this reason the use of electric power and/or mechanical power is of primary interest to all the engineers and technicians having to do with drilling, production, pipe lining, and refining.

For instance, in oil-well drilling the mud pump requires from 60 to 70 percent of the total power required.

In production of oil from wells, and handling of oil on the surface through flow tanks and stock tanks, pumping operations are predominant.

In the transportation field, pumping problems are of primary concern in handling liquids through pipe lines.

In the refining industry the crude pumps, transfer pumps, hot oil charging pumps and water pumps, use about 90 percent of the total power required.

And last but not least, the marketing phase of the business requires pumps for bulk station handling and for filling the tanks of trucks and automobiles.

A conception of the vast amount of energy required is illustrated in Table 1.

Thus, in Table 1 it will be noted that the petroleum industry requires a total

of 9,545,000,000 actual and equivalent kilowatt hours to achieve the purpose of each division. It is estimated that an additional 6,160,000 horsepower of oil and gas engines and steam engines are also required by the entire petroleum industry, which would generate an additional equivalent of about 20 billion kilowatt hours.

Purchased and Private Power

In the production phase of the industry, the motors using privately generated power are about 12 percent of the 772,000 horsepower shown as being installed for pumping oil wells. Motors using generated power consume 1250 kilowatt hours per horsepower per year, whereas motors using purchased power consume 2050 kilowatt hours per horsepower.

In the refining industry, a study of all refineries, 485 in the U. S., based on Department of Commerce data, indicates that about 40 percent of the total electric energy required is generated and the remainder purchased. The load factors achieved in either case are approximately 60 percent, and the average cost of the purchased power was 73 cents per kilowatt hour, which in turn is about .41 percent of the sale value of refined products.

Electric Drilling

There are about 28,000 wells drilled each year with all types of drilling equipment—straight steam, diesel mechanical, diesel d.c., a.c. electric, and a.c.-d.c. M. G. Sets—and these wells are drilled to an average depth of approximately 4000 feet. The amount of energy required for drilling these wells is shown in Figure 1, covering about 279 operations. All of the wells, for which data is shown in Figure 1, were drilled with a.c. equipment with wound-rotor motors for operation of the draw works and mud pump, with exception of six which were drilled with a.c. power converted to d.c. through a motor generator set to an average depth of 7000 feet. Note the amount of energy required by the six wells so drilling very closely approximates that required by a larger group of wells using a.c. power. The inference that can be gained from this is that the losses in transforming a.c. to d.c. power are approximately equal to the losses in the wound-rotor a.c. motors to gain speed control, always required in drilling operations. Very little information is available between the depths 7500 feet and 10,000 feet, but in recent years straight a.c. drilling rigs have been used to drill wells from 10,000 feet to 11,000 feet, and it can be noted how closely this information at this greater depth fits the curve for lesser depths. The value in information of this kind is that kilowatt hours can be converted to horsepower hours and in turn the amount of gas or oil or Butane fuel, should other types of rigs be used, can readily be computed.

TABLE 1

Petroleum Industry Use of Electrical Energy

	Motor H.P.	Percent Electrified	Generated and Purchased Annual kwh Required
Drilling Wells	.....	3%	2,250,000,000†
Oil Production	772,000	21%	1,515,000,000
Pipe Lines	453,000	29%	2,270,000,000*
Refineries	1,159,606	35%	3,510,000,000
Total	.....	....	9,545,000,000

* Includes Big Inch Lines 1944. † Actual plus equivalent energy.

Production of Oil

Table 2 illustrates the various methods to achieve oil production:

The table is prepared to indicate about 12 of the conventional methods of pro-

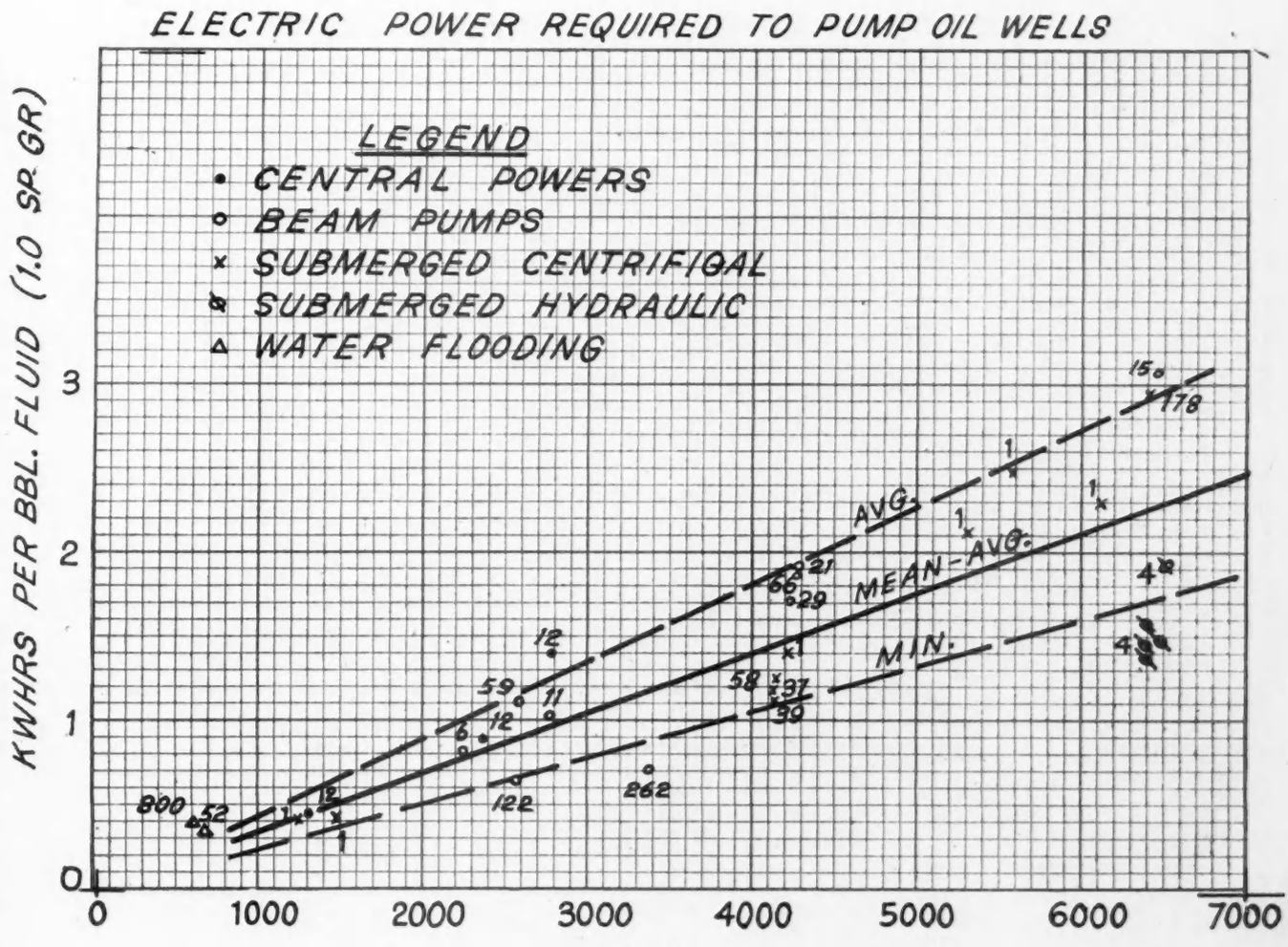

FIGURE 2

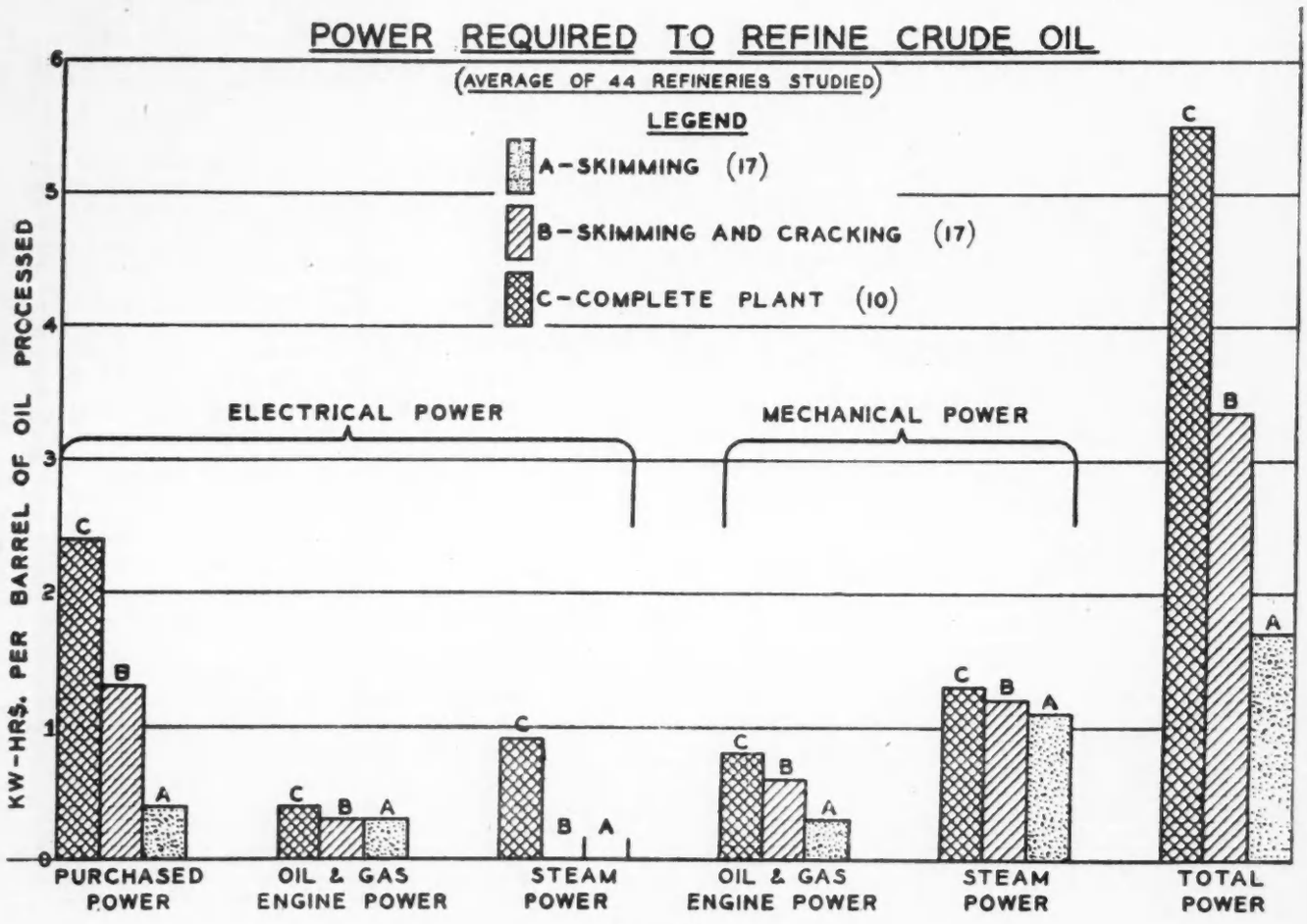

FIGURE 3

ducing oil wells and shows the limitations in which each is suggested to be used from a standpoint of depth, also limitations to handle the known production along with the approximate horsepower required for minimum and maximum quantities of production. There are only about five or possibly six of the above production methods which lend themselves readily to the use of electric motors.

Equipment Selection Guide

Figure 2 is shown to guide the selection of proper horsepower rating of the equipment, and the information obtained for the energy required at various depths, in terms of kilowatt hour per barrel of 1.0 specific gravity fluid, is helpful and indicates that there is not a great deal of choice in the selection of equipment from a standpoint of overall efficiency, for the mean average curve denotes that practically all methods are approximately 37 percent efficient, that is from electric energy input to fluid delivered in surface tanks.

Central powers are not used for depths much in excess of 2500 feet. Individual beam pumps can be used for most any depth, and the submerged centrifugal pump can be used for all depths, but since the centrifugal pump is essentially a low-head, large-volume pump it is more efficient at the shallower depths. A study of some 852 shallow wells, about 600 feet deep, shows that it requires approximately the same amount of power per barrel of fluid as the other methods, when water flooding is used and wells flow by injection pressure. In using the curves in Figure 2, when applied to individual beam pumps, it is suggested that the horsepower rating of the motor selected be based on the data from the curve and then increased by a factor 1.3 to 1.4. Perhaps the most versatile pumping unit is the centrifugal submerged pump, since it can be used for practically all depths and all volumes desired, provided the casing is large enough. In the early Oklahoma City oil field days, this submerged centrifugal pump was used to take potential readings on wells wherein the pump and motor would be set on the bottom, and pump at the rate of approximately 5000 barrels per day through a lift of about 300 feet, with the conventional 100 horsepower motor. At the 300-foot off-bottom level, a packer would be located and the entire production then brought to the surface by gas lifting. This enabled operators to obtain the greatest potential possible and consequent allowables.

TABLE 2

Oil Production Methods

Producing Methods	Depth of Producing Well in Feet		Fluid Required to be Pumped from Each Well Barrels per Day		Horse Power of Prime Mover Required per Well	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Beam Well Pumping	800	8,000	1	500	3	75
Gas Lifting	3,000	6,500	500	5,000	75	500
Intermittent Gas Lift	4,000	6,500	100	1,000	25	100
Plunger Lifting	3,000	6,500	100	1,000	25	100
Hydraulic Lifting	5,000	8,000	50	300	10	40
Pneumatic Rod Lifting	3,000	6,500	50	500	25	100
Centrifugal Bottom-hole pump	1,500	6,500	1,000	3,000	25	200
Combination of No. 7 and No. 2	5,000	6,500	3,000	5,000	150	200
Casing Rod Pump	1,000	2,500	2,000	3,000	25	50
Swabbing	4,000	6,500	1,000	2,000	75	150
Repressuring	800	1,500	5	25	10	100
Power Pumping	800	2,500	1	25	1	5

Bottom-Hole Hydraulic Pump

Much can be said for the bottom-hole hydraulic pump in the way of efficiency, as noted from Figure 2, where the test

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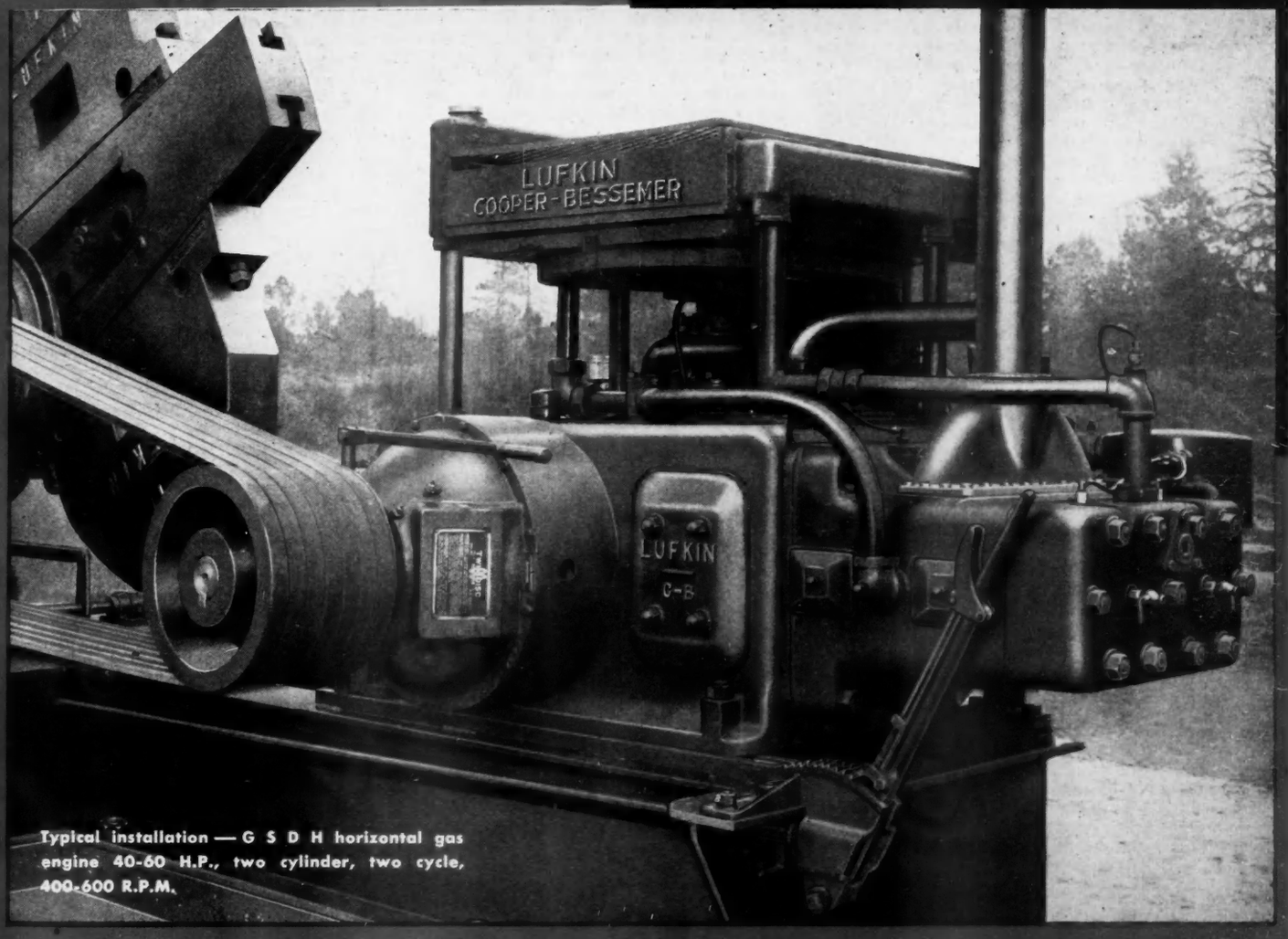

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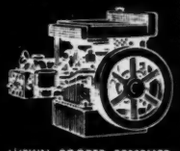

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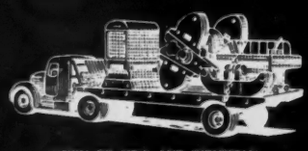

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Oil Pipe Lines

Prior to 1925, practically all main trunk line pumping was performed with steam or internal combustion engine power, wherein plunger pumps were made use of. The advent of the centrifugal pump brought about changes in the viewpoint of the pipe line engineers to such an extent that during the next ten years almost 75 percent of prime movers installed for this service were electric motors operating centrifugal pumps, and resulted in some 250,000 horsepower of electric motors being installed. At that time centrifugal pumps usually operated at 1765 revolutions per minute, driven by four-pole induction motors. However, a few years later in a few instances two-pole synchronous motors were used to operate centrifugal pumps at 3570 rpm. The efficiencies of the large capacity duplex or triplex plunger pumps were of the order of 90 to 95 percent; whereas, the efficiencies of the centrifugal pumps fell between 65 and 75 percent. Ordinarily, an electric induction motor centrifugal pump station can be installed for about a third the cost of a comparable capacity internal combustion engine-plunger pump station.

Later on, high-speed centrifugal pumps were driven through speed increasing gears from internal combustion engines, and the spread in investment between it and the electric station was slightly reduced. Some attempts were made to make electric motor-driven pump stations operate automatically but eventually it was found that the fixed charges on the electric automatic control equipment, in most cases, would be greater than the operating labor cost required by the station not having automatic control features.

Two Pumping Units

The conventional electric pump station usually consisted of two pumping units, which, when operated in series, provide full capacity and each pump delivering one-half the total initial line pressure. Thus, with one unit in operation it was possible to achieve 70 percent of line capacity. In the case of the Big Inch lines, there were three pumping units installed in each station, each unit capable of providing one-third the total initial line pressure. In this case, with two units in operation, approximately 83 percent capacity could be delivered, and with one unit in operation approximately 55 percent of the line capacity could be achieved.

The advantages of using electric motors for prime movers provide low maintenance, fewer operating men, and a wide range of capacities with minimum energy required, when a great number of stations are considered in a long pipe line. When studies are made of pipe line deliveries, considered over a long period of time, the relation between "electric load factor" and "capacity factor" can readily be determined, and such information can then be used for guidance in the preparation of an economic study to determine pumping costs and proper selection of pumping units. Thus, the term "capacity factor," if expressed in percentage as being the relation between the annual barrels actually pumped and the annual design capacity in barrels, will then equal the "electric load factor" expressed in percentage raised to the ½ power, when such percentage expresses the relation between the actual kilowatt hours consumed and the maximum kilowatt hours which could have been consumed if operated at 100 percent capacity. In applying this relation for electric motor-driven pipe line stations over long periods of time—as an example—if the line delivered 80 percent of its maximum design capacity, it would require approximately 64 percent of the maximum possible kilowatt hours. Ordinarily, the amount of electric energy for long pipe lines can be expressed in terms of kilowatt hours per barrel per 100 miles. In the case of small diameter lines, from six to 12 inches with 700 pounds initial pressure pump station, electrical energy will be about ¾ to one kilowatt hour per barrel per 100 miles. In the case of the Big Inch lines, however, where the pumps were 86 percent efficient and the motors 94 percent efficient, this value became ½ kilowatt hour per barrel per 100 miles.

Gas Pipe Line Pumping

During the war great strides were made in the manufacture of axial flow compressors used in conjunction with the jet propulsion airplane industry, and it is entirely possible that axial flow compressors will lend themselves to natural gas transmission to be operated by electric induction motors. Some 15 years ago, a centrifugal blower type compressor was installed, capable of handling 90 million cubic feet daily, with a pressure differential of about 100 pounds, driven by a 3000-horsepower induction motor, both motor and the six-stage blower being contained in a five-foot diameter cylinder. The conventional method used by gas transmission lines requires approximately 45 horsepower per million cubic feet daily per 100 miles with compression ratios of 2.0; whereas, if axial flow compressors would be feasible, the power necessary could be reduced to about half of that shown above with compression ratios of 1.25, using two such axial flow compressor stations per 100 miles.

The investments required by the electric driven axial flow compressor stations would be approximately ⅛ of that required by the conventional reciprocating compressor station for comparable distances.

Oil Refineries

During the last 15 to 20 years, the oil refining industry has gradually increased the usage of electric power throughout its plants until today it has installed about eight horsepower for each barrel of hourly crude capacity. The use of electric motors has grown from the original usage, when motors were only used to operate centrifugal pumps for the condensing of water supply, until today motors are used on practically every application throughout the refinery. Slow-speed synchronous motors generally are used to operate the ammonia compressors in the plants producing lubricants for the removal of paraffin.

The hot oil charging pumps now are of the centrifugal type and in some cases reach capacity of 1500 to 2000 horsepower. In a few cases, smaller rated motors, perhaps 250 horsepower with variable speed, thyratron tube control, are used for crude charging pumps. All of these motors can be made explosion-proof and lend themselves for refinery service very readily. The principal uses of electric power in refineries are listed below:

Lighting Requirements

1. Lighting. It is generally considered good practice to use about 3 percent of the total energy required in refining operations for floodlighting, tank lighting, building lighting, etc.

2. Pumping. (a) Water pumping through condensers requires pressure of about 50-pounds per square inch. (b) Water pumping through spray ponds requires pressures of about 20-pounds per square inch. (c) Charging pumps for both crude and hot oil. In the case of charging pumps for cracking units, the hot oil is recirculated perhaps eight or ten times and pressures of 1000 pounds are required. Continuity of power supply is essential, and steam turbines can be used for speed control in starting and stopping or to obtain better heat balances. (d) Charging pumps for reflux, tars, pitch, and other side products from fractionalizing columns. (e) Transfer pumps and treating pumps. (f) Boiler-feed pumps. (g) Deep-well pumps for make-up.

3. Compressors. (a) Air compressors for maintenance work, agitating air, tube cleaning, tank and car cleaning. (b) Ammonia compressors for refrigeration to eliminate paraffin from lubricating oil, and synchronous motors for better power factor throughout the refinery, are usually installed.

4. Welding. All maintenance, construction, and repair work requires arc-welding, and portable motor-driven generators are essential.

Individual Motors

5. Machine Shops. Lathes, drills, pipe-threading machines, hacksaws, grinders, buffers, cranes, planers, and many other applications requiring individual motor drive, are essential in every refinery.

6. Conveying Equipment. In large refineries, particularly those in which lubricating oil is produced, motors are used to convey sacks, drums, cans, and cartons of the finished product; also chain and belt conveyors are adapted to move filtration clays, acid-sludge, and petroleum coke.

7. Miscellaneous. Mechanical agitators and mixers, dehydrators, clocks, and meters.

Figure 3 is submitted to indicate the power requirements of the various type of refineries—skimming, skimming and cracking, and complete refinery. It was obtained from a study made to determine averages from about 10 percent of the total number of refineries in this country and indicates the amount of purchased power, mechanical power produced in plants, and electric power produced in the plants by all forms of prime movers. From Figure 3, it can be noted that the total of all forms of power required to refine oil in a complete refinery is approximately 5.5 kilowatt hours per barrel; whereas, the skimming and cracking refineries require only 60 percent of this amount. These data were assembled prior to the last war and do not take into account the additional power required for production of aviation gasoline.

Comparatively Small Amount Vented—

TEXAS GAS

By C. CLYDE PRYOR, Staff Writer

ALTHOUGH a large volume of gas is being vented in Texas, the quantity vented constitutes only a very small amount in comparison with the amount produced and used. Texas oil and gas wells produced 240,860,783,000 cubic feet of natural gas during the month of January, 1946, and only 8,008,526,000 cubic feet, or 3.33 percent, was vented, according to a new report recently issued by the Oil and Gas Division of the Railroad Commission of Texas.

Of significance is that most of the gas vented into the air occurs at gasoline plants. Only a very little gas is vented directly into the air from wells. Therefore, much of the gas vented has been stripped of its wet components. The fact that much of the gas venting occurs at plants also is of importance as it indicates the problem of gathering it for utilization is not as serious as might be thought, since it already is being taken to plants. The commission's report shows gas venting during January as follows (in cubic feet):

Gasoline plants	7,267,609,000
Cycling plants	288,362,000
Casinghead gas wells	387,580,000
Dry gas wells	64,975,000
Total vented	8,008,526,000

Gas from 47,674 oil and gas wells, 184,633,241,000 cubic feet, including 454,305,000 cubic feet of refinery vapors, went to gasoline plants and others, including cycling plants — approximately 76.6 percent of the total gas produced— for the production of 4,945,120 barrels of liquid products. Of the total products of the 204 gasoline and cycling plants reported, 3,368,088 barrels were gasoline.

The complete report issued recently by the commission contains eight tables; natural gas production, gasoline plant operations, pressure maintenance and repressure plant operations, cycling plant operations, hydrocarbon liquids recovered from natural gas, and carbon black plant operations. Production of gas wells and casinghead gas are contained in two separate tables by commission districts.

Disposition of All Gas

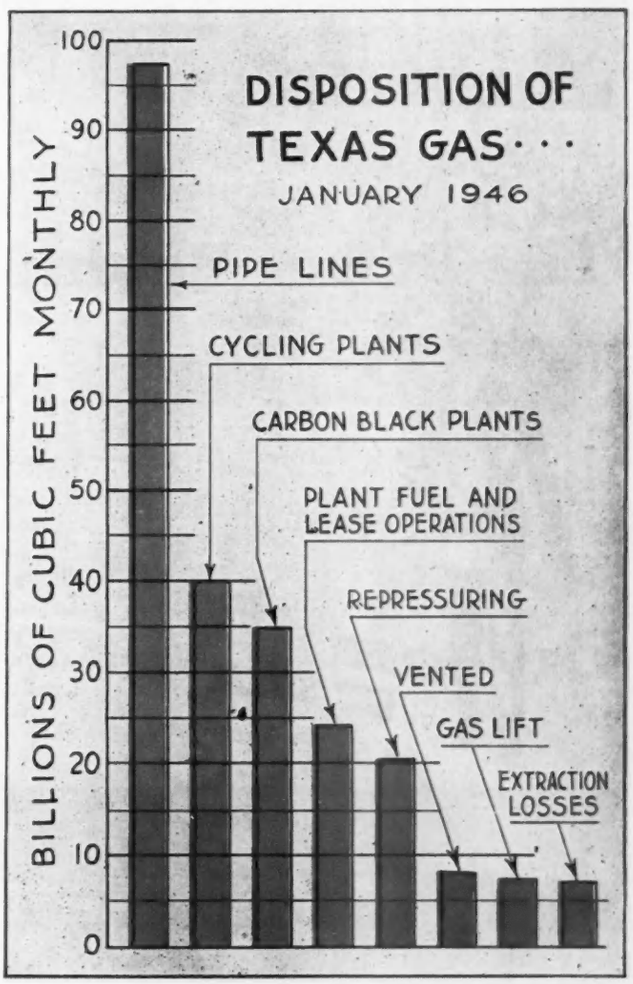
In the section of the table showing the ultimate disposition of all gas, the greatest volume, 97,611,571,000 cubic feet, representing 40.53 percent, was taken by pipe lines for light and fuel uses. Cycling plants handled 40,251,795,000 cubic feet or 16.71 percent, followed by carbon black plants with 35,024,575,000 cubic feet or 14.54 percent. Total gas vented, 8,008,526,000 cubic feet, was only 3.33 percent of the total gas produced, which was slightly more than extraction losses of 3.08 percent or 7,421,710,000 cubic feet. Fourth largest percentage of the total gas produced was used for plant fuel and lease operations amounting to 24,178,614,000 cubic feet or 10.04 percent.

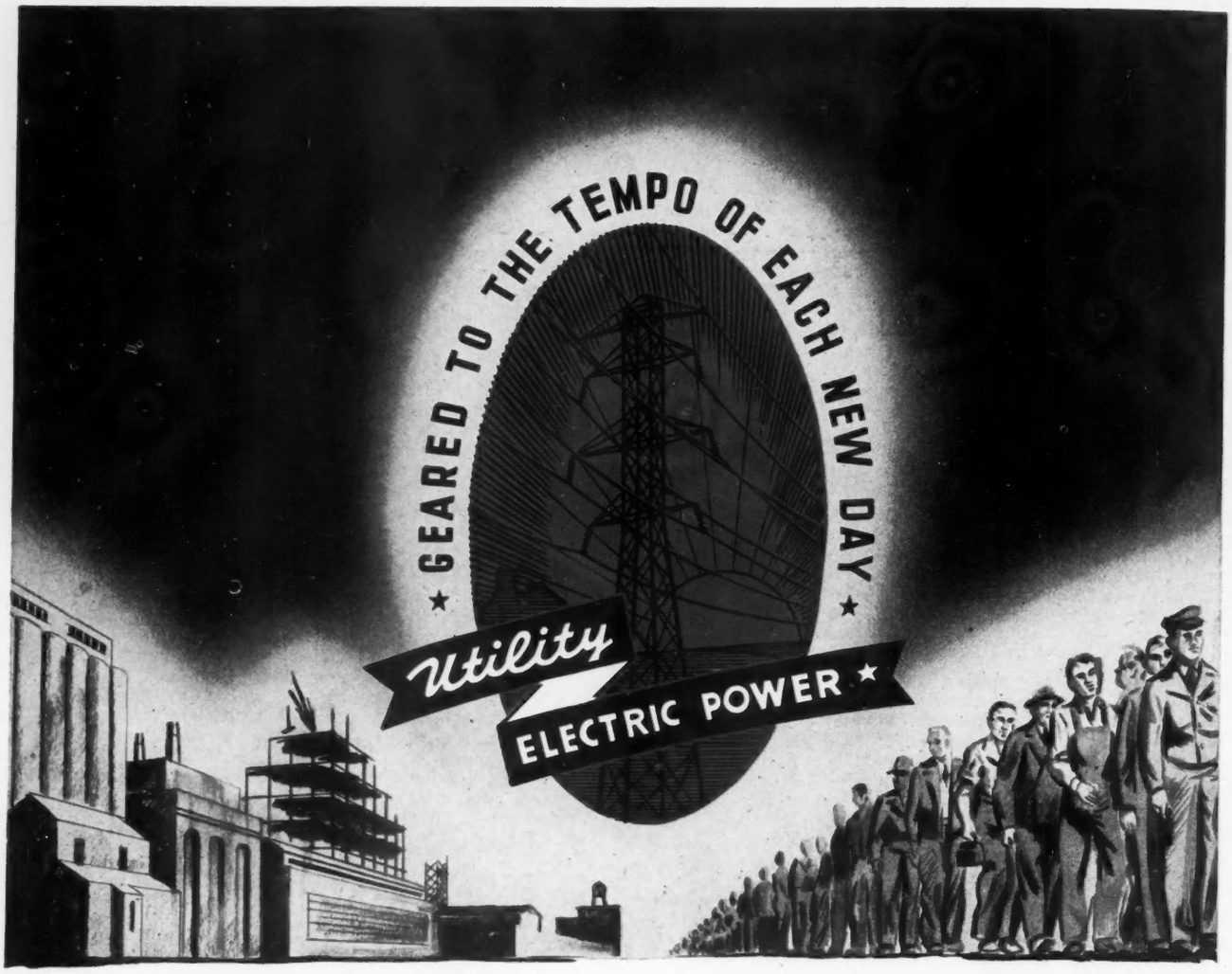
Of interest to producers is the fact that gas wells produced 188,352,361,000 cubic feet as compared with 52,054,117,000 cubic feet of casinghead gas, which is more than 3½ times the volume of casinghead gas. In addition, only 0.03 percent or 64,975,000 cubic feet of gas well production was vented; whereas, 0.74 percent or 387,580,000 cubic feet of casinghead gas is vented—nearly six times as much casinghead gas. The tables show 84.21 percent of the casinghead gas was taken by gasoline plants,

Texas Natural Gas Production and Disposition— January, 1946

All gas volumes in thousands of cubic feet reported at a standard pressure base of 14.25 pounds per square inch plus four ounces (14.65 PSI) and a flowing temperature of 60° F. Data from Texas Railroad Commission report.

	Volume	Percent
Gas Well Dry Gas:		
Producing Gas Well	3,948	....
Production Dry Gas, Total	188,352,361	100.00
Sweet Dry Gas Produced	163,684,750	86.90
Sour Dry Gas Produced	24,667,661	13.10
Disposition:		
To Pipe Lines for Light and Fuel	43,647,992	23.18
Lease Operations and Drilling	6,937,520	3.68
Gas Lift	5,524,374	2.93
To Cycling Plants	62,402,656	33.14
To Gasoline Plants	68,711,193	36.48
Repressuring	1,063,651	.56
Vented	64,975	.03
Casinghead Gas:		
Oil Wells Reported	58,119	....
Production Casinghead Gas Reported	52,054,117	100.00
Disposition:		
To Pipe Lines for Fuel and Light	3,146,790	6.05
Lease Operations and Drilling	2,216,727	4.26
Gas Lift	286,730	.55
To Cycling Plants	1,560,969	3.00
To Gasoline Plants	43,837,299	84.21
Repressuring	618,022	1.19
Vented	387,580	.74
Refinery Vapors	454,305	....
All Gas (Casinghead and Dry):		
Production, Total	240,860,783	100.00
Dry Gas Production	188,352,361	78.2
Casinghead Gas Production	52,054,117	21.6
Refinery Vapors	454,305	0.2
Ultimate Disposition:		
Extraction Loss	7,421,710	3.08
To Pipe Lines for Light and Fuel	97,611,571	40.53
Plant Fuel—Lease Operations	24,478,614	10.04
Gas Lift	7,761,500	3.22
To Carbon Black Plants	35,024,575	14.54
Cycling	40,251,795	16.71
Repressuring	20,602,492	8.55
Vented and Line Loss	8,008,526	3.33





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43,837,299,000 cubic feet, plus 36.48 percent of the gas well production, 68,711,193,000 cubic feet.

Cycling plants received only 3.0 percent or 1,560,969,000 cubic feet of casinghead gas plus 33.14 percent or 62,402,656,000 cubic feet of gas from gas wells. Pipe lines for light and fuel uses received 23.18 percent, 43,647,992,000 cubic feet, of gas well production and 6.05 percent or 2,146,790,000 cubic feet of casinghead gas. Gas production was from 3948 wells and casinghead gas from 58,119 wells.

Gasoline and Cycling Plants

Gasoline plants and others, a total of 171 plants, were credited with 133,362 barrels of condensate-crude (4.13 percent) and cycling plants (33 plants) 331,235 barrels, or 19.27 percent. A total of 2,339,462 barrels of gasoline, or 74.38 percent, was produced by gasoline plants and others and cycling plants 1,719,074 barrels, or 56.35 percent. Total butane-propane recovery by gasoline plants and others amounted to 684,697 barrels, 21.22 percent, and for cycling plants alone 356,624 barrels, 20.74 percent. Cycling plants produced 10,633 barrels of methane-ethane and 51,956 barrels of other products as compared to 8525 barrels of other products by gasoline plants. Production of gasoline plants was 3,226,046 and cycling plants 1,719,074 barrels; a total of 4,945,120 barrels.

Pressure maintenance and repressuring plant operations reported use of 9,702,039,000 cubic feet of gas. A total of 137 plants reported an injection volume of 9,467,307,000 cubic feet (97.58 percent) into 558 wells, an average of 16,966,500 cubic feet per well. Intake gas to plants was 68.60 percent, 6,655,886,000 cubic feet of residue gas and 28.06 percent casinghead gas, 2,721,924,000 cubic feet. The plants and leases used 133,300,000 cubic feet or 1.37 percent, which averages 973,000 cubic feet per plant.

Hydrocarbon Liquids from Gas Wells

Total liquids produced from gas wells for the month amounted to 5,435,509 barrels with natural gasoline the largest item, 3,370,909 barrels, 62.01 percent. Production of butane-propane was second with 1,041,321 barrels or 19.16 percent. According to the commission report by districts, the largest volume of liquids was produced in District 10 amounting to 1,433,285 barrels (approximately 26.4 percent). Second largest production was by District 3 with 1,365,426 barrels (approximately 25.2 percent), followed by Districts 5-6 having 1,196,569 (approximately 22.1 percent). District 10 also produced the greatest volume of natural gasoline for the month, 1,160,733 barrels (about 34.5 percent of the total gasoline produced). Other districts produced less than 50 percent of the volume of District 10. Districts 5-6 produced 332,754 barrels of butane-propane (approximately 31.9 percent) followed by District 10 with 271,157 barrels (approximately 26.0 percent). District 3 ranked third with a production of 247,473 barrels of gasoline (approximately 23.7 percent). The report showed that District 3 was the only district credited with producing methane-ethane, which amounted to 10,633 barrels.

The commission reported on 45 carbon black plants, which used a volume of 33,191,731,000 cubic feet during the month, an average of 737,594,000 cubic feet per plant. Total carbon black manufactured was 60,734,890 pounds, or 1,349,664 pounds average per plant. The average amount of carbon black produced per 1000 cubic feet of gas for the state was 1.83 pounds. District 3 reported the highest yield per 1000 cubic feet of gas as 6.24 pounds, more than 4.4 pounds higher than the state average. District 4 was second with 2.83 pounds per 1000 cubic feet yield, followed by District 8 with 2.36. Carbon black in storage was given as 72,716,015 pounds, slightly more than the month's production, or 1,615,911 pounds average per plant.

District 10 ranked first in the volume of gas used for carbon black manufacture with 26,694,472 cubic feet, approximately 80.5 percent of the total gas used. Carbon black manufactured was 42,927,573 pounds, approximately 70.5 percent of the total manufactured. The District also has in storage 55,803,601 pounds of carbon black which is nearly six times as much as the next highest district, or approximately 76.6 percent. District 8 ranked second to District 10 in volume of gas used, carbon black manufactured, and carbon black in storage.

Texas Gasoline and Cycling Plant Operations—January, 1946

All gas volumes in thousands of cubic feet reported at a standard pressure of 14.25 pounds per square inch plus four ounces (14.65 PSI) and a flowing temperature of 60° F. Gas intake includes imported gas processed; and intake by plants receiving gas from and returning to pipe lines (main line plants). Data from Texas Railroad Commission reports, tables for gasoline and cycling plants having been combined to facilitate publication.

	Gasoline Plants	Cycling Plants
Number of Plants	133	33
Number of Others†	38	.....
Total Plants	171	33
No. Oil Wells Produced	45,152	386
No. Sweet Gas Wells Produced	1,193	400
No. Sour Gas Wells Produced	553	.....
Total Wells Produced	46,898	786
Intake:		
Casinghead Gas	44,268,279	1,558,990
Sweet Gas	44,359,574	62,402,504
Sour Gas	23,754,773	.....
Refinery Vapors	454,305	.....
Other Sources (Pipe Lines)	7,512,974	321,842
Total Intake	120,349,905	64,283,336
Residue Disposition:		
Extraction Loss	5,551,573	1,870,137
Plant-Lease-Drilling	11,772,405	3,118,662
Gas Lift	1,225,926	649,078
Repress. and Pressure Maintenance	11,018,361	8,137,190
Cycling	124	40,251,671
Carbon Black	35,024,575	.....
Transmission Lines	48,489,332	9,968,236
Vented	7,267,609	288,362
Total	120,349,905	64,283,336
Plant Production (Barrels):		
Condensate-Crude	133,362	331,235
Gasoline	2,399,462	968,626
Butane-Propane	684,697	356,624
Methane-Ethane	.....	10,633
Other Products	8,525	51,956
Total	3,226,046	1,719,074

†Other plants include pressure maintenance; repressure. Dehydrating plants and all other classifications of plants processing gas for the extraction of hydrocarbon liquids; also drips and scrubbers—gas volumes through drips and scrubbers not included (liquid recovered only).

Hydrocarbon Liquids Produced from Texas Gas—January, 1946

Includes condensate and crude oil accumulated on leases, and all products of cycling, gasoline, pressure maintenance, repressuring, dehydration and miscellaneous classifications of processing plants recovering liquid hydrocarbons from natural gas, all from scrubbers and drips on transmission lines. Data condensed from Texas Railroad Commission report.

	Barrels Monthly
Condensate GO-1 Reports	487,568
Condensate—Crude Processing Plants	465,620
Total	953,188
Natural Gasoline	3,370,909
Methane-Ethane	10,633
Butane-Propane	1,041,321
Others	59,458
Total Liquids	5,435,509

Texas Carbon Black Plant Operations—January, 1946

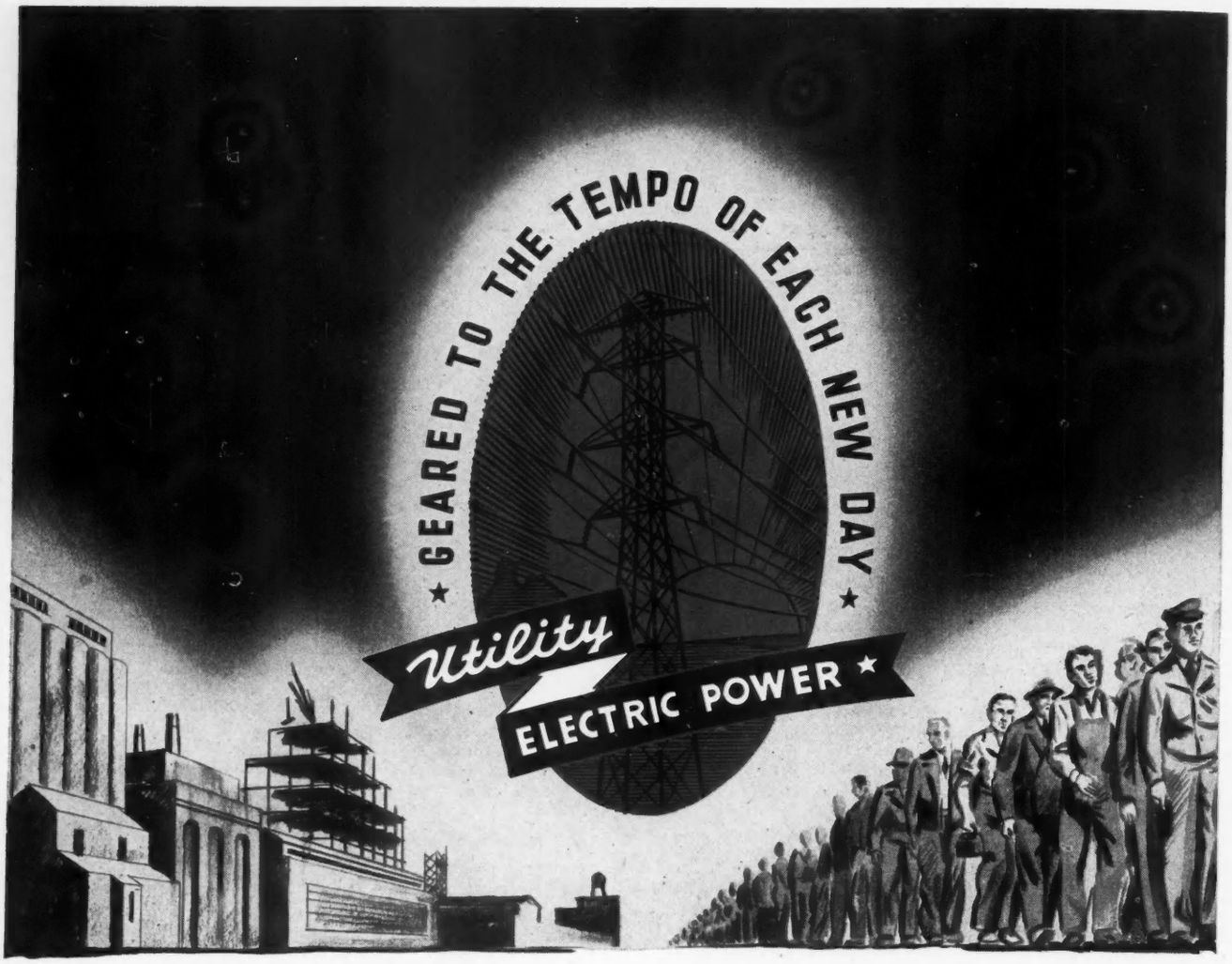
All gas volumes in thousands of cubic feet monthly. Table condensed from Texas Railroad Commission report.

	Volume
Number of Plants	45
Gas Used for Carbon Black	33,191,731
Refinery Vapors Unprocessed	14,969
Gas Used for Other Purposes	347,758
Carbon Black Manufactured, Lbs.	60,734,890
Carbon Black in Storage, Lbs.	72,716,015
Carbon Black Produced Per 1,000 Cubic Feet of Gas	1.83

Texas Pressure Maintenance and Repressuring Plant Operations—January, 1946

All gas volumes in thousands of cubic feet reported at a standard pressure base of 14.25 pounds per square inch plus four ounces (14.65 PSI) and a flowing temperature of 60° F. Data from Texas Railroad Commission report.

	Volume	Percent
No. of Plants	137	....
Intake—Kind of Gas:		
Casinghead	2,721,924	28.06
Dry Sweet	234,887	2.42
Dry Sour	22,785	0.23
Residue	6,655,886	68.60
Pipe Line	66,557	0.69
Total	9,702,039	....
Disposition of Residue:		
Gas Used for Plants and Lease	133,300	1.37
Gas Lift	75,392	0.78
Pressure Maintenance and Repressuring	9,467,307	97.58
Transmission Lines	26,040	0.27
Total	9,702,039	....
No. of Injection Wells	558	....
Volume of Gas Injected	9,467,307	97.58



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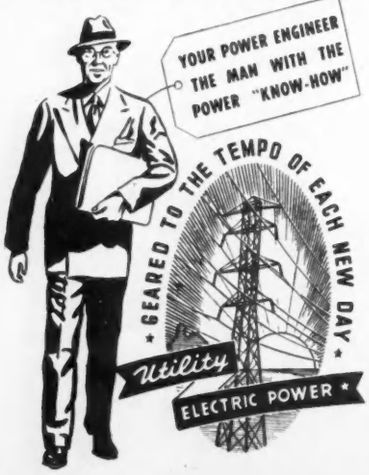

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Includes condensate and crude oil accumulated on leases, and all products of cycling, gasoline, pressure maintenance, repressuring, dehydration and miscellaneous classifications of processing plants recovering liquid hydrocarbons from natural gas, all from scrubbers and drips on transmission lines. Data condensed from Texas Railroad Commission report.

	Barrels Monthly
Condensate GO-1 Reports	487,568
Condensate—Crude Processing Plants	465,620
Total	953,188
Natural Gasoline	3,370,909
Methane-Ethane	10,633
Butane-Propane	1,041,321
Others	59,458
Total Liquids	5,435,509

Texas Carbon Black Plant Operations—January, 1946

All gas volumes in thousands of cubic feet monthly. Table condensed from Texas Railroad Commission report.

	Volume
Number of Plants	45
Gas Used for Carbon Black	33,191,731
Refinery Vapors Unprocessed	14,969
Gas Used for Other Purposes	347,758
Carbon Black Manufactured, Lbs.	60,734,890
Carbon Black in Storage, Lbs.	72,716,015
Carbon Black Produced Per 1,000 Cubic Feet of Gas	1.83

Texas Pressure Maintenance and Repressuring Plant Operations—January, 1946

All gas volumes in thousands of cubic feet reported at a standard pressure base of 14.25 pounds per square inch plus four ounces (14.65 PSI) and a flowing temperature of 60° F. Data from Texas Railroad Commission report.

	Volume	Percent
No. of Plants	137	....
Intake—Kind of Gas:		
Casinghead	2,721,924	28.06
Dry Sweet	234,887	2.42
Dry Sour	22,785	0.23
Residue	6,655,886	68.60
Pipe Line	66,557	0.69
Total	9,702,039	....
Disposition of Residue:		
Gas Used for Plants and Lease	133,300	1.37
Gas Lift	75,392	0.78
Pressure Maintenance and Repressuring	9,467,307	97.58
Transmission Lines	26,040	0.27
Total	9,702,039	....
No. of Injection Wells	558	....
Volume of Gas Injected	9,467,307	97.58

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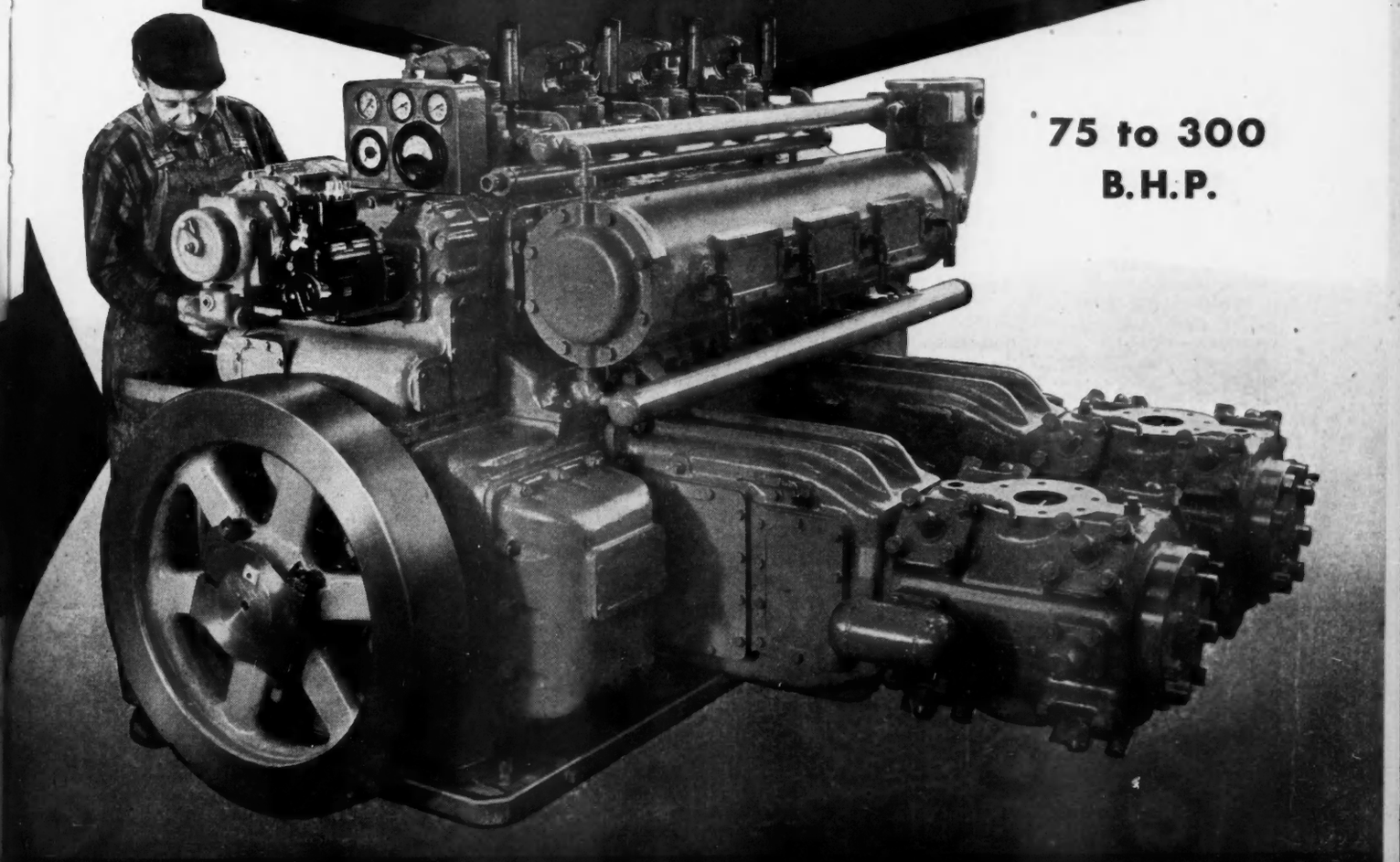


75 to 300 B.H.P.

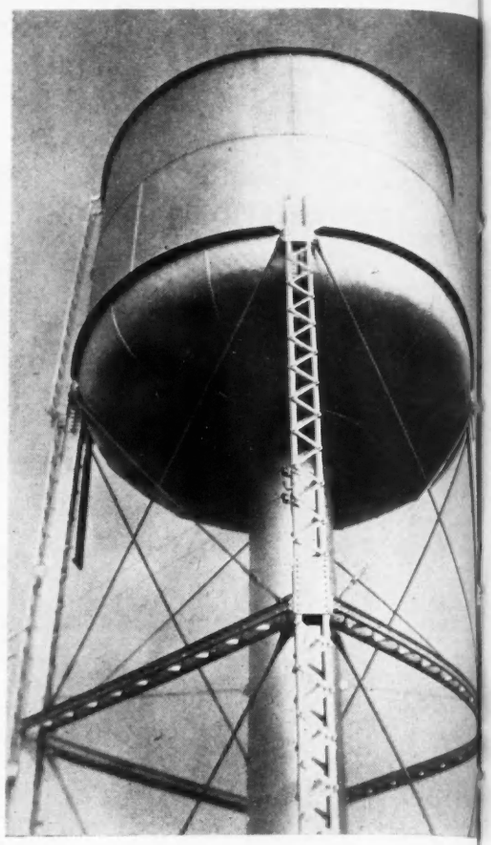
CLARK

ONE OF THE DRESSER INDUSTRIES

SETS THE PACE IN COMPRESSOR PROGRESS

Method of Reconditioning Elevated Water Tanks

By WILLIAM E. HUDDLESTON, Consulting Engineer
Bartlesville, Oklahoma



FOLLOWING an increasing amount of internal corrosion on the bottom and sides of several elevated steel water tanks, a large gas utility organization worked out a systematic procedure for inspecting, repairing, coating and applying cathodic protection to the working tanks at several of their main line compressor stations.

The 50,000-gallon tanks are used to store engine jacket cooling water and are of the type illustrated in the accompanying photo. In normal operation they are connected in the discharge line of the engine jacket water circulating water pumps and "float" on the delivery line leading to the main engine. They serve the dual purpose of providing adequate capacity storage for cooling water and also of providing an emergency supply of cooling water in case the circulating water pumps should be out of service for a short period. In the latter case cooling water can gravity over the engines while repairs are being made to the pumping units.

The tank proper is of riveted construction with the sides and bottom 5/16-inch thick. During a year's operation a considerable amount of scale and sediment settled over the entire bottom of the tanks. This precipitation stimulated corrosion, with the result that the tank bottoms were generally pitted and eventually developed leaks in scattered locations, either from actual penetration of the bottom steel plates or as the result of a rivet being weakened by corrosion to the extent that leakage developed around the rivet or in the seam being held by the rivet.

Making Repairs

To make the proper repairs it was necessary to drain the tank and wash down the excess sedimentation by means of a small fire hose, using approximately 45 pounds per square inch water pressure. This amount of pressure was adequate to effect a fairly good job of cleaning on the tank interior. After the tank had dried thoroughly the interior was carefully inspected for deep pits, "slab" corrosion and weakened rivets. The bottom is comprised of 19 segments, and for reference purposes, each segment was assigned a number.

Begininng the inspection on sav, Section 1, the three most important types of corrosion failures to note were (1) Pits having a depth exceeding 150 mils, (2) "slabbed" areas, and (3) rivets that had become loose as a result of corrosion.

The deep pits were circled with a chalk mark for subsequent pit welding; the slabbed areas were bounded with chalk marks to determine patching requirements and the weakened rivets were marked for electric welding. The marks bounding the slabbed areas were measured and tabulated for use in cutting out the required patches. Incidentally, it was found that ⅛-inch steel plate was more suitable for patching the tank bottom due to the ease in fitting the patch to the curvature of the bottom sheets. It was only necessary to tack the patch on one or more sides and then hammer it to shape before welding.

Weakened Rivets

The extent of rivet deterioration was often such that on slight movement of the rivet it would drop out of place. The method of electric welding the weakened rivets in such a manner as to prevent seam buckling on adjacent sides of the welding operation and yet stop all leakage is therefore of particular interest. This was performed in the following manner: The 200-ampere electric welding machine was adjusted to its lowest possible setting and, using 5/32-inch rod, a rivet was welded all the way around. This operation usually required not more than 12 seconds, which was insufficient to attain excessive heating of the steel plate. As a matter of precaution no other welding was performed within two feet of a completed rivet until that rivet had entirely cooled. By exercising the same precautions on the welding of tank seams, repairs were made without the slightest damage to any portion of the water tank.

As an illustration of the small amount of heat evolved in the welding process described above, it was possible to hold the hand on a rivet just 30 seconds after the conclusion of the welding operation.

Coating the Tank Interior

After completing the necessary repairs the tank and cylinder interiors were coated with a single application of a coal tar service cement preparatory to installing cathodic protection. For best results the following precautions should be observed during the coating procedure: The tank wall should be clean and dry. Although the protective cement is for a cold application, preheating to a temperature of approximately 90°F. in times of cold weather will facilitate easier application. Better results can be obtained if the coating operation is not performed during extremely cold weather. The coating will harden appreciably and result in a better job if the tank is left out of service for at least ten days following the application of the coating.

Installing Cathodic Protection

As a means of preventing further deterioration of the elevated water tanks it was considered advisable to install cathodic protection to each tank immediately after the necessary repairs had been completed. Accordingly, an 8-volt, 8-ampere cathodic rectifier was connected in service nad adjusted to facilitate the proper amount of protection. A study of water samples from several of the tanks resulted in standardization of the capacity described above. Pipe anodes were used on all tanks and the spacing of the individual anodes within the various tanks was modified in certain cases in order to establish the most favorable load resistance for efficient operation of the rectifying equipment.

Economics of Reconditioning

At the time leaks first developed on the elevated water tanks, reconditioning was considered the most feasible method of dealing with the corrosion problem, partly because of the slow (and perhaps indefinite) delivery of steel and other needed materials and partly because of the savings that could be effected through the reconditoning procedure. The cost of replacing a tank bottom was estimated at $4,800 and the time required to make the replacement was estimated as being several months. The average cost of reconditioning, coating and installing a cathodic protective unit on each tank amounted to approximately $950, or slightly less than 20 percent of the replacement cost. These figures pertain only to the tanks in the greatest need of repairs, and in which cases an outright tank bottom replacement would have normally been recommended.

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Tax Review

A Regular Feature of THE OIL WEEKLY

By WILLIAM O. TAYLOR*

Most Net Profit Payments Now Depletable

After the article which appeared in "Tax Review" in THE OIL WEEKLY May 20 was submitted but prior to its publication, the Supreme Court, setting something of a record for speed, decided the *Burton-Sutton Oil Company* case, referred to in that article. Burton-Sutton had acquired certain leases by assignment and was obligated to pay 50 percent of the net profits from operating the leases to a prior assignor. It sought to exclude the net profit payments from its income; the government contended that such payments represented cost of acquiring the leases and should be capitalized. The Supreme Court, with two justices dissenting and one concurring with obvious distaste, sided with the taxpayer. In effect, the court held that the net profit payments represented an economic interest to the recipient, taxable to him and depletable by him, and that they were not income at all to the lease operator. In other words, the net profit payment was treated exactly like an overriding royalty.

The effect of the *Burton-Sutton* decision and those in the *Kirby* and *Crawford* cases, discussed in the issue of May 20, is to so hem in the decision in the *Elbe Oil Land Development Company* case, also discussed in that issue, as to make the latter case applicable only to the particular facts involved in it. In the *Elbe* case, the owner of leases assigned them for large cash payments and a share in profits. Only the cash payments were involved in the taxable years which were before the Supreme Court, but it is most difficult to read the decision without reaching the conclusion that the court said the net profit payments would not be depletable by the recipient, exactly opposite to the conclusion reached in the *Burton-Sutton* case. In the latter case, the majority opinion points out that the only issue before the court in the *Elbe* case was the proper treatment of the ***cash payments,*** so it cannot be said with certainty that, even on the facts of the *Elbe* case, the court would say the ***net profit payments*** were not depletable. It does seem fairly certain that net profit payments will be treated as depletable by the recipient and as excludable from the income of the person making such payments in just about every other kind of transaction known to the oil industry involving such a payment.

One of the most interesting developments in the *Kirby* and *Burton-Sutton* cases is the discussion of the effect which retention of an overriding royalty by an assignor has on the treatment to be given other consideration which he receives for the assignment. *Palmer v. Bender,* 287 U. S. 551, one of the most celebrated and oft-cited cases concerning depletion, involved an instance in which the owner of leases assigned them for cash, an oil payment, and an overriding royalty. The Supreme Court in that case seems to say that the depletability of the cash payment is determined by the fact of the assignor's having retained the override. At any rate, it has been widely so interpreted. However, in the *Burton-Sutton* and *Kirby* cases, the court seems to say that the retention of an override, although it gives the assignor an economic interest as to the oil received by reason of the override, does not necessarily have any bearing on the depletability of amounts received under the profit sharing arrangement retained in the same deal.

There does not seem to be any very good reason why the retention of an override should have any less affect on the depletability of a net profit payment retained in the same deal than it has on a cash payment received in that deal. Nor does there appear any logical reason why the retention of an economic interest in the form of an override should have any less effect than the retention of an economic interest in the form of an oil payment, and yet cash received by an assignor who retains only an oil payment is not depletable. Furthermore, the depletability of a cash payment received for making or assigning a lease seems inconsistent with the definition usually employed to describe an "economic interest," i.e., the interest of one who must look ***solely to production*** for a possibility of profit or a return of his capital investment.

What was decided in the *Burton-Sutton* case and what was said in the opinion about the effect of retaining an override merely emphasize what has long been obvious, i.e., the practical impossibility of rationalizing some of the land-mark decisions on which rest the body of case law which has been built up around the depletion question.

Herndon Case Appears Wrong on One Point, Right on Another

In the case of *Herndon Drilling Company,* 6 T. C. No. 82, Herndon acquired part of the working interest in certain leases and entered into an agreement with the other owners that Herndon would pay all costs of development and operation and be reimbursed, as to the other owners' share of such costs, out of their share of production. They agreed to assign their interest in the leases to Herndon during the pay-out period, such assignment to be "in the nature of a mortgage" to secure Herndon. It was further provided that if the other owners wished to sell their interest in any undeveloped leases, Herndon would re-assign such leases to them but the proceeds of such sales should be applied on the amount due Herndon, as should any amounts realized because of salvage recoveries.

In order to illustrate the issues in the case, it will be assumed that Herndon acquired one-half the working interest and then spent $20,000 drilling and $12,000 equipping a well thereon, which well produced $10,000 worth of oil during tne first year, all of which was taken by Herndon under the agreement. According to the opinion in the case, Herndon contended that half the oil recieived by it was, in effect, a payment on the $16,000 loan it had made to the other owners. Thus it claimed the right to apply $5000 against the loan, i.e., not treat it as income at all, and to report as income and compute depletion on only $5000, the oil accruing to its part of the working interest. The court held, however, that Herndon had, in effect, bought an oil payment of $16,000 out of the other owners' half interest and that the entire $10,000 represented depletable income to Herndon.

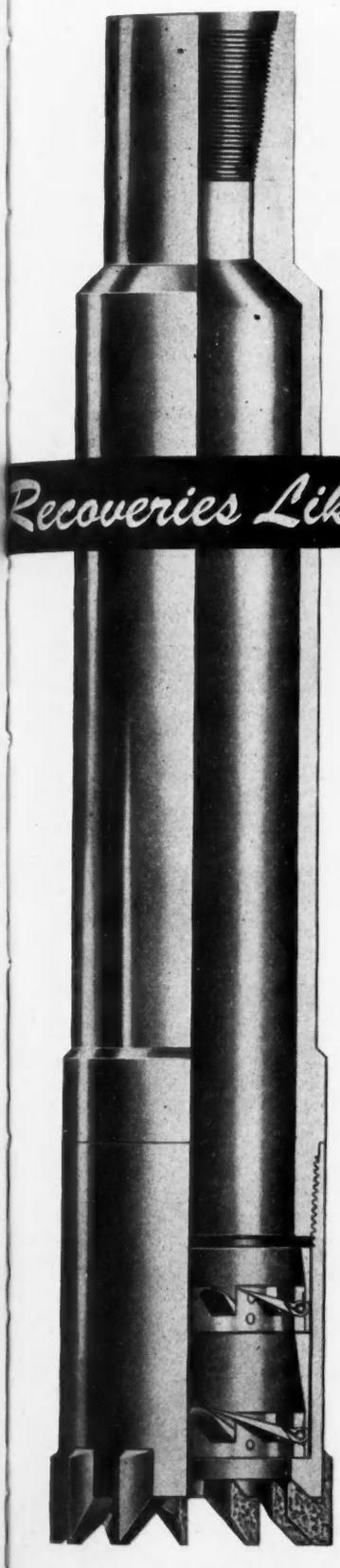
The court's decision seems to be wrong on this point. It will be noted that Herndon could recover the sums spent by it on behalf of the other owners from proceeds of sale of some of the leases involved or from salvage, as well as from production. *Anderson* v. *Helvering,* 310 U. S. 404, seems almost exactly in point to the effect that if an amount is collectible out of production but may also be collected from some other source, it does not represent an economic interest and amounts collected, even from oil production, are not depletable income. It thus appears that Herndon was correct in arguing that, as to half the proceeds of oil sales, it was not required to treat the proceeds as taxable income.

The government contended, too, that Herndon should throw its working interest income and oil payment income together in computing its depletion allowance. On this point, the court decided in favor of Herndon, saying that Herndon had two "properties" for purposes of the depletion computation. Thus, except for the fact that no showing was apparently made as to the amount of oil which would be required to satisfy the oil payment, Herndon was entitled to cost depletion as to income from the oil payment in an amount which, except for an interest factor in the agreement, would be equal to the income. The practical effect of this, as far as Herndon is concerned, is the same as if Herndon's first point had been sustained. As to the income from its share of the working interest, Herndon is entitled to cost depletion or percentage depletion, whichever is the greater.

The government's contention, i.e., that Herndon had only one "property" for purposes of computing depletion, would doubtless have reduced Herndon's overall depletion allowance as follows: Amounts spent by Herndon on behalf of the joint owners, when added to the cost to Herndon of acquiring its part of the working interest and spread over the total oil expected to be recovered by Herndon, would very probably have reduced the cost depletion unit to a point where percentage depletion would be controlling. The probable result would be that, as to oil payment income as well as working interest income, Herndon's maximum amount of depletion would be 27½ percent of such income. As was pointed out above, under the court's decision Herndon gets depletion on oil payment income practically dollar-for-dollar equal to such income, i.e., nearly 100 percent.

It should not be assumed that it makes no difference, if Herndon computes depletion on the oil payment income separately, whether the court was right or wrong on the first question discussed above. Under the court's decision, the joint owners are not required to report and pay on the income from their working interest which went to reimburse Herndon. Under the rule announced in the *Anderson* case, they would have to do so.

* The author is a member of the law firm of Butler, Binion, Rice & Cook, Houston.



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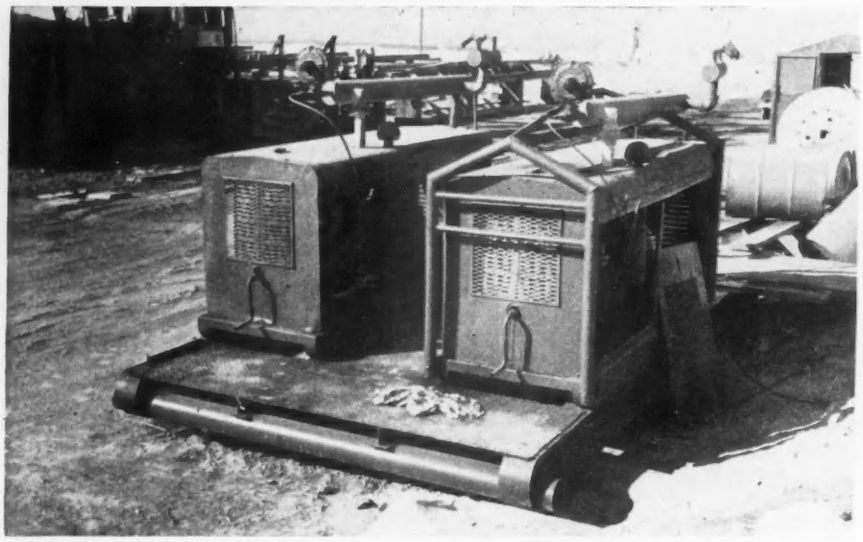
Twin Light Plant Units Are Unitized on Single Mount



RIG LIGHTING

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A feature which improves engine performance of these small plants is the system wherein the fuel gas is heated by passing it through the overhead exhaust muffler. After being heated, the gas flows through a low-pressure regulator mounted at the end of the chamber, then goes on into the carburetor. Pre-heating of the gas in this manner assures constant temperature fuel and on varying loads, the engines will function more smoothly.

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Extension Rod Speeds Measuring-In Drill Pipe

MEASURING LINES

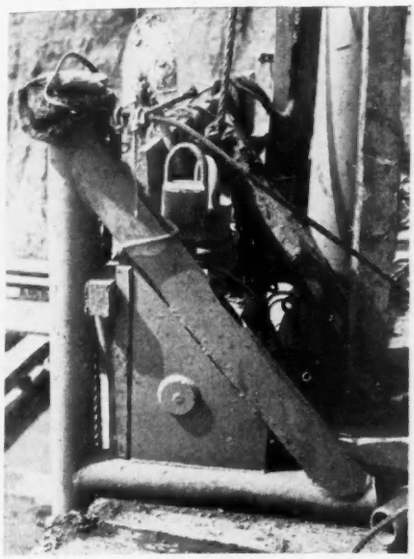
The task of measuring a stack of drill pipe standing in the derrick is time-consuming, and particularly wearisome to the derrickman who must reach far out into space in order to attach his end of the tape to the top of each joint as the man on the floor reads off the lengths. Simplifying the task of the derrickman is the measuring-in extension rod device rigged up by one crewman. It consists of a rod about eight feet long, to the top of which is welded an overhanging arm, the latter having a small nubbin of rod welded to its outer end to facilitate dropping the device into the open end of a length of drill pipe and making sure it will stay there until lifted out.

At a point near the joint of this horizontal arm with the long rod itself is a small wire clip to which the ring on the end of the tape is attached before the job is started. A small shoulder is welded to the long rod a fourth the way down from its upper end, to permit alignment with the joint being measured.

The extension device, equipped with a single handle at the lower end, is easy to use and is easily laid away in a corner of the rig when not in use. Its use helps to cut men and rig-hours on the job through reduction of this measuring-in time.

It is best constructed from half-inch or three-quarter inch sucker rod or salvaged pull rod. A welder can assemble the pieces in short order to make up this handy time-saver.

Sheave in Back-Up Post Facilitates High-Line Work



With the aid of a small sheave, together with slight modification of one of the tong back-up posts, the superintendent of one company has built up a convenient device which eliminates need for a snatch block on special jobs and which also greatly facilitates the moving of heavy tools or equipment out of the derrick. In the center of the tong back-up post—that nearer the derrick window—was installed a 10 by 1-inch sheave. Mounted vertically as shown, the sheave was housed between two parallel ¼-inch steel plates tack welded at top and bottom to the pipe members of the back-up post. Immediately above the sheave, elongated holes were cut out of the five-inch pipe making up the diagonal member of the post. The derrick end of the high-line is run down through the other slot, under the sheave and on up through the other slot. An eye is secured to this end, and to which the cat-line may be attached. The highline itself runs up inside the derrick, over a sheave, then outside down to a back-up post located at the end of the walkway. The outside end is brought up to or near the derrick floor.

SHEAVES

The back-up post itself is made of used pipe welded in a right-triangle form as shown. The vertical member is of four-inch material, the floor-level horizontal piece is three-inch, and the diagonal of five-inch. The entire unit is bolted to the derrick floor.

Suggestions for the Care Of Drill Pipe

The following suggestions designed to prolong drill collar life have come from long observation of drill collar failures and their causes:

PIPE CARE

In making up drill collars, every joint should be thoroughly cleaned with kerosine. Every precaution should be made to keep the brush clean. A stiff bristle brush is preferable to a wire brush and the kerosine should be changed as frequently as necessary to keep it clean.

Following the cleaning, careful inspection of boxes and pins for cracks, damaged threads and sprung shoulders should be made.

Any damaged threads or pin and box shoulders should be dressed down with a flat file. In the event of damaged box threads or galling of any part of the joints, the joint itself should be sent in for repair immediately and not be run until after the repair is made.

In making up, joints should be lubricated thoroughly with a reputable thread lubricant put on with a clean paint brush. Foreign material in the lubricant can do a great deal of damage.

While making up, the joints should be stabbed carefully without setting down on the shoulder or dropping the threads together hard.

The joints should be made tight with both tongs as close to the joint as practical, and unnecessary jerking and whipping of the joints in the rotary should be avoided.

The loss of time occasioned by drill collar failures, regardless of the quality of their manufacture, is such as to require the greatest care in following the above suggestions.

Considerable damage is done to drill collars and kellys during transportation. For this reason, every possible precaution should be taken to protect the threads.

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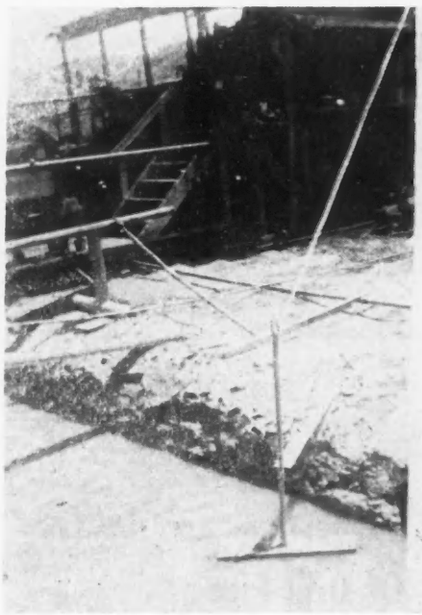
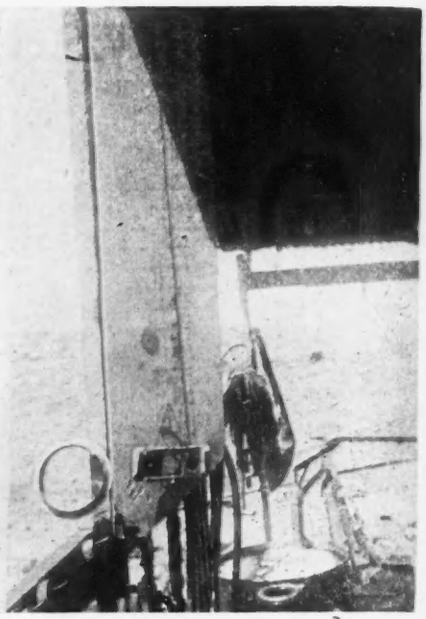
Mud Pit Level Gauge Makeshift But Useful





Composed of scraps and roughneck ingenuity is a makeshift mud level gauge used on a drililng rig in Oklahoma. Where the pits cannot be viewed directly from the derrick floor, this novel idea gave men on the rig the level of mud in the pit at a mere glance. The entire arrangement was made of scraps ordinarily found around any drilling rig. A piece of heavy timber was used as the floating member in the pit, and has a vertical arm nailed to it. To this arm was tied a string which tended directly to the edge of the rig floor where it was threaded through a small pulley mounted about ten feet above the floor.

MUD GAUGE

The end of this string was tied to a weight heavy enough to keep the string tight, yet light enough to prevent dislodging the floating member from its position in the mud pit. The weight on the end of the string slides up or down, depending on the mud level in the pit, on the face of a board 12 inches wide, nailed upright to a housing stud. This board was calibrated in inches above and below a certain predetermined zero, which was the optimum level in the pit. As long as such an arrangement was in effect, it was easy to determine the mud level in the pit at any time, and would indicate when more mud should be mixed, or when excessive amounts of mud were being lost to thief formations.

At the end of the job, it is not even necessary to keep this equipment since it can be remade so easily and inexpensively.

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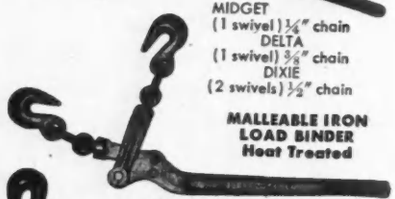
ROTARY
CASING SCRAPER

LOAD BINDERS

SMOOTH HANDLE STEEL LOAD BINDER
PAT. PENDING

MIDGET (1 swivel) ¼" chain
DELTA (1 swivel) ⅜" chain
DIXIE (2 swivels) ½" chain



MALLEABLE IRON LOAD BINDER Heat Treated

LONE STAR No 1—141 lbs. (2 swivels ⅜" and ⅝" chain
LONE STAR No. 2—161½ lbs. (2 swivels) ½" and ⅝" chain

DROP FORGED LOAD BINDER Heat Treated

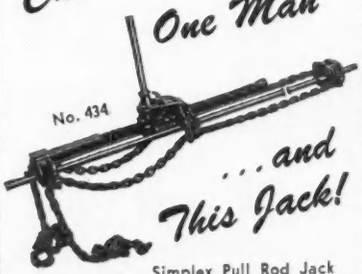
No. 1—10 lbs. (2 swivels) ⅜" and ½" chain
No. 2—17½ lbs. (2 swivels) ½" and ⅝" chain

STEEL CONSTRUCTION WIRE STRETCHERS

No. 3—3 Pulleys, plain bearings, ⅜" rope
No. 33—3 Pulleys, roller bearings, ⅜" rope
No. 4—4 Pulleys, plain bearings, ⅜" rope
No. 44—4 Pulleys, roller bearings, ⅜" rope
No. 88—4 Pulleys, roller bearings, ½" rope

DURBIN-DURCO
Manufacturers of Certified Specialties
Drop Forged and Malleable Iron
6611 OLIVE ST. ROAD — ST. LOUIS 5, MO.

Broken Pull Rods Call For Only One Man



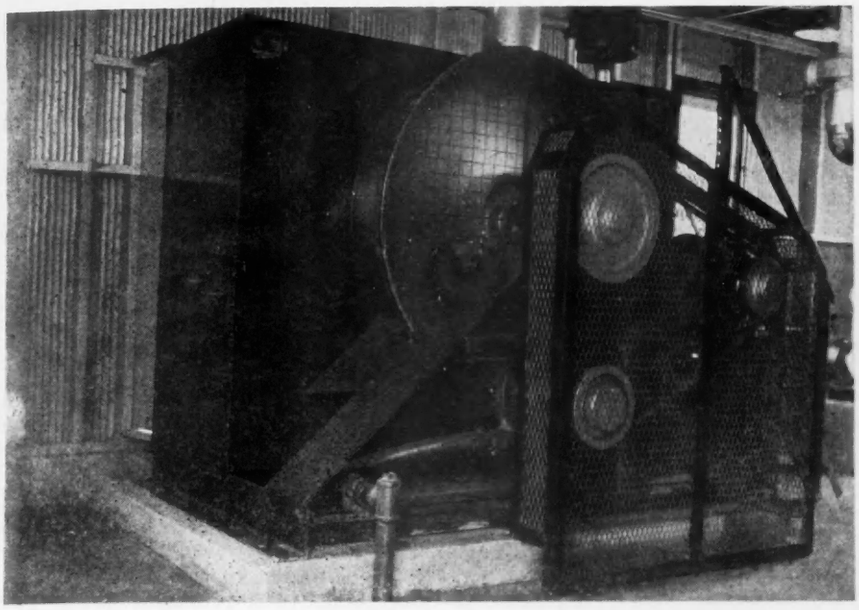
. . . and This Jack!

Simplex Pull Rod Jack No. 434 for shallow wells; 3-tons capacity. No. 440 for deep wells, 7 tons capacity, 22" take-up with one grip.

One man carries, operates Simplex Double Chain Pull Rod Jack which rapidly pulls together—in a straight line—broken rods on central powers or back crank units. No kinking or damaging. Speed crank takes up slack. Send for Catalog 45.

Simplex
LEVER SCREW - HYDRAULIC
Jacks
Templeton, Kenly & Co.
Chicago (44), Illinois
Better, Safer Jacks Since 1899

Combination Sheave System Conserves Space, Saves Power



By using sheaves of appropriate diameters, one pipe-line station obtains desired fan and circulating-water pump speeds with a single set of V-belts, a single adjustment of the driving motor position tightening the entire set of belts and insuring against slippage in either unit.

PULLEY SYSTEMS

The water pump is carried on the same spider which supports the fan, with suction and discharge connections through standard radiator hose so as to protect the lines from unit vibration. The pump body is slung from above, being adjustable within fairly wide limits so as to make the initial outfitting of the drive with belts only a matter of choosing the nearest standard length. The pump once set, further tightening of the drive is obtained by moving the motor away from both driven sheaves.

An expanded metal shield, formed to include the entire belt drive and to extend to the floor below the sheaves, prevents accidental contact with the belts, and also aids in inspection of sheaves, belts and tension in the unit.

Elevated Dollies Facilitate Handling Pipe

A useful device around any pipe yard where 4 inch or larger pipe must be moved, is the elevated pipe dolly fabricated by one pipe line company. The dolly consists of several discarded pieces of pipe, short sections of channel iron, some discarded rollers from the conveyor of a junked ditching machine and some cast off thread collars for 12-inch pipe. The feet of each dolly are two pieces of eight-inch pipe about 30 inches long with legs 30 inches high welded at 90 degrees and forming a V, the top of which is welded to a short section of channel iron. A bolt placed through the channel provides an axle for the rollers. The 12-inch pipe collar was cut into thirds, and two of these sections welded to form ears on each side of the rollers. These ears form guides to hold the pipe against the rollers while the pipe is being moved lengthwise. These dollies have been found useful in handling pipe up to 12-inches in diameter, and are light enough to be moved from one spot to another by hand.

PIPE HANDLING

Trenching it's BUCKEYES

They dig trench in any soil with the kind of speed that is helping our nation out of a crisis. The tough, compact Model 11, smallest of the Buckeye Pipeliners, for small crude lines and gasoline and natural gas lines. Model 12 for medium lines; Models 32 and 48 for main lines.

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Findlay, Ohio
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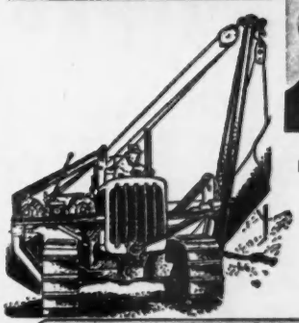
TRENCHERS. SHOVELS. CRANES
BACKFILLERS. TRACTOR EQUIPMENT.

PIPELINE "Know-how"

F. A. (Arnold) Smith
Partner



PIPE LINE CONSTRUCTION
COMPRESSORS WELDERS
DITCHERS TRUCKS
DOZERS TRACTORS

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ODESSA, TEXAS

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FORT WORTH NATIONAL BANK BLDG.
FORT WORTH 2, TEXAS

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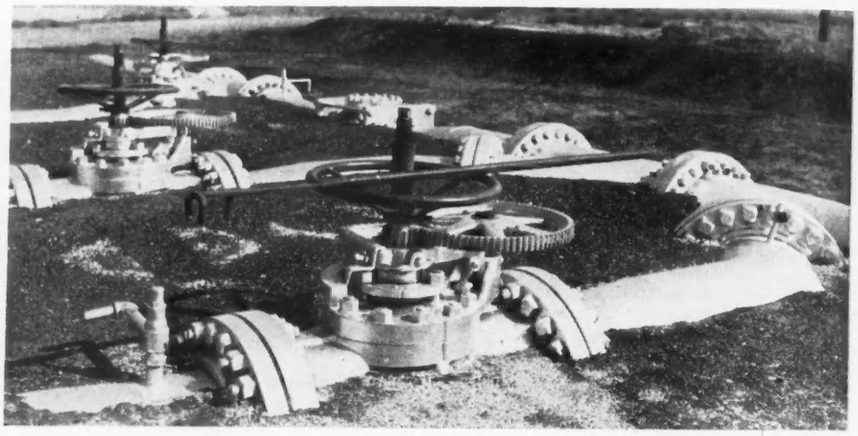
TYPE "B" — Over 30,000 pounds test — for chain sizes up to 5/8 inch.
Guaranteed against failure under normal usage.

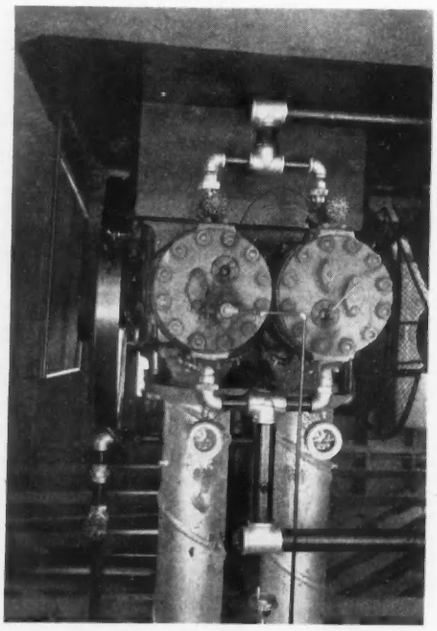
Forked Tool Facilitates Operation of Large Valves



VALVE OPERATION

One-man operation of the heavy valves found in pipe line operations frequently presents quite a problem, particularly when such installations have to be opened or closed just as quickly as possible in switching from one line to another. Finding it extremely difficult to break open some of the valves which had become stuck because of long periods without having been moved, one station operator had a tool built up that leaves no question as to his ability to quickly loosen and turn the valve wheels. The simple tool consists of a short length of flat bar to which a U-shaped prong is welded at the end, and several inches from it, a straight pin, these being made of sucker rod material and arranged as shown. Clearance between the projecting fingers is such that they just fit over the rim of the gate wheel, allowing the man to obtain a grip with which he can either pull or push on the pipe handle extension of the lever. The handy tool is kept conveniently near the several valve installations.

Exhaust Provides Cooling System



ENGINE CARE

Heat from the exhaust pipes themselves is utilized to set up a ventilating current which draws air around the engine cylinders and thence through ducts to the outside of the station building. The engine exhausts are carried vertically from the ports to a point above the station roof, and there tied to muffler manifolds which serve the dual purpose of quieting the surge and preventing the entry of rain into the pipe.

Each exhaust pipe is enclosed in a short portion of light pipe, some four inches larger in diameter than the outside diameter of the exhaust. These covers are carried on spiders at the exhaust flange, and are provided with conical shields which tend to prevent the entry of air from above, forcing the draft to enter from around the engine.

The air in the annulus between exhaust pipe and shield, being heated, rises rapidly, drawing in at the base fresh air from the station. The rate of flow is dependent upon the difference in temperature between the air in the annulus and the atmosphere, with only relatively slight heat being radiated to the outer or shielding pipe.

The shield is carried through the roof, terminating some three inches short of a conical shield, welded snugly to the higher riser of the exhaust line. The heated air is discharged under this shield, which serves to prevent entry of rain down the annulus.

By closing the area of this annulus during winter months, a greater amount of heat reaches the shield, which then becomes an effective hot-air radiator for warming the air within the station.

NEW EQUIPMENT LITERATURE

For additional information, use mailing card inserted opposite this page

1—Gauge Glass

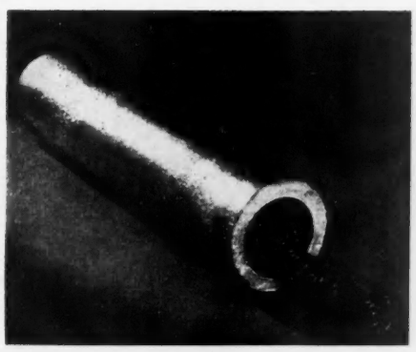
Recommended for installations in which there is violent surging or splashing within the vessel is the new packless gauge glass assembly, a recent product of Henry Valve Company. The gauge is equipped with a safety ball check device which automatically closes each tube in case the glass gauge is broken. Additional safety is afforded by a sturdy metal guard which protects the strong,

high pressure glass tubing. The assembly is claimed to have the advantage of the packless valves which permit inspection or replacement of diaphragms without loss of liquid because of the backseating valve stem construction. The gauge assembly is said to conform to all safety code requirements. Glass gauge tubes are available for any desired length up to 24 inches.

(Check item 1 on coupon for more information.)

2—Magnesium Anode

A method for combating corrosion in pipe lines, tanks and other equipment has been developed by the Magnesium Division of The Dow Chemical Company. This method consists of attaching to the buried equipment at predetermined points a magnesium anode surrounded by a suitable low resistance back fill. This anode is connected to the equip-



ment to be protected by a number 12-gauge, single strand, copper lead wire. This arrangement is said to provide the electrochemical current demanded by the cathodic areas, or those parts of the metal equipment exposed to the corrosive agent. Anodes vary in size from 4 to 8 inches and in weight from 16 pounds to 60 pounds.

(Check item 2 on coupon for more information.)

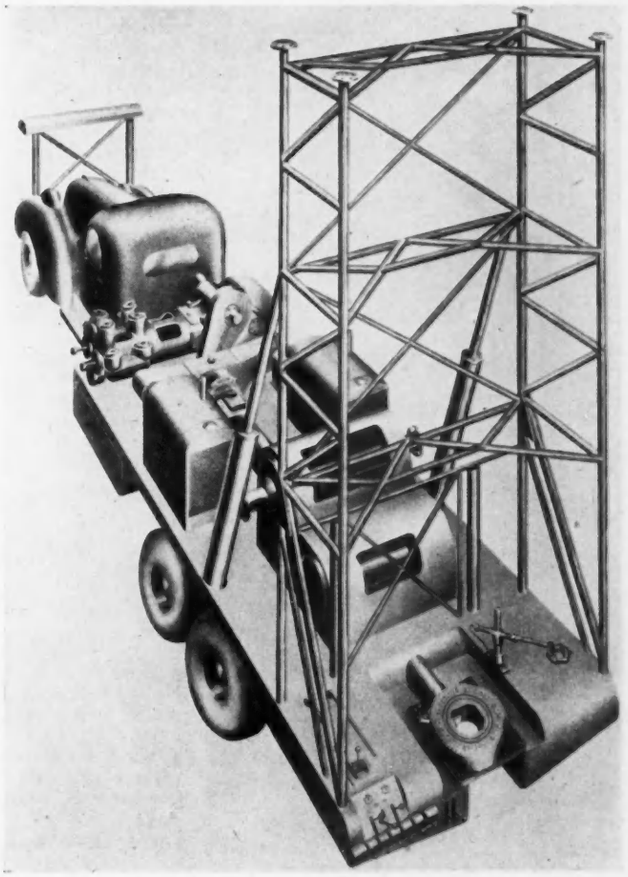
3—Mobile Rig

George E. Failing Supply Company will start production the latter part of 1946 on a new 2500 Drill, the company's first postwar product.

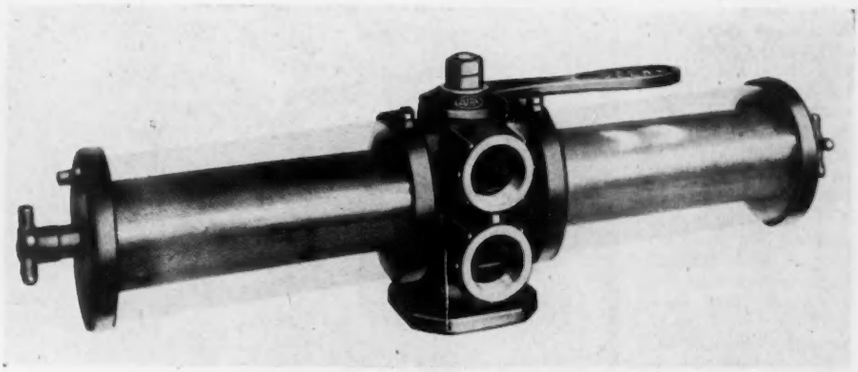
Replacing models 55 and 2000, the 2500 is designed for drilling to a depth of 2500 feet, using 2⅞-inch drill pipe. It includes the latest types of controls and operating technique and is suitable for truck, trailer or skid mounting. It will weigh (less truck or skids) approximately 18,000 pounds, with dual engines, compounding drive, draw works, rotary table and mast.

A new type mast has been constructed so that the load is more evenly distributed through the front and rear legs of the seamless, all-electric welded steel tubing. The mast is lowered by two hydraulic cylinders and is sectionalized so that a ten-foot section may be added without alterations. The all-steel oil bath rotary table is equipped with special bearings. The new type double draw works is actuated by two air clutches. The heavy duty transmission permits four speeds forward, one reverse. It will be equipped with dual engines.

(Check item 3 on coupon for more information.)



4—Pipe Line Strainer

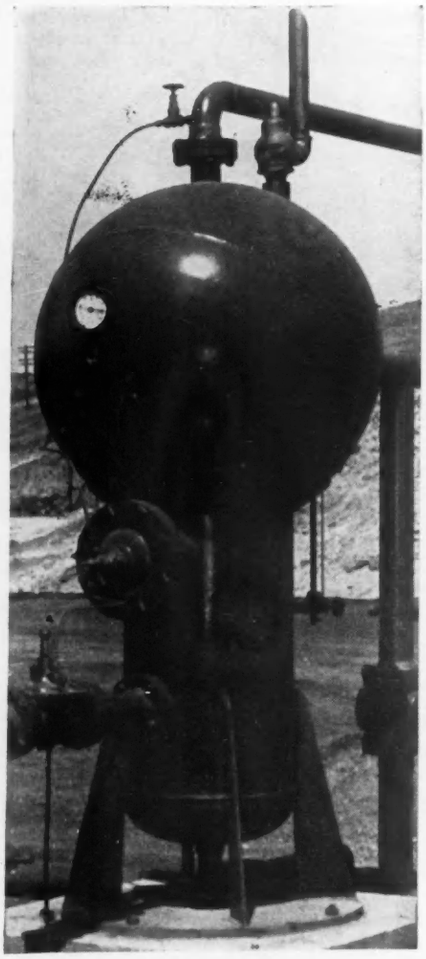


The J. A. Zurn Manufacturing Company is manufacturing a new duplex pipe line strainer made with a transparent lucite casing that permits visual inspection. Without disturbing the strainer, a maintenance man, engineer or operator can readily see whether the strainer unit needs cleaning. If it does, flow can be diverted into the other chamber, without loss of pressure, and the filled chamber can be cleaned while the pipe line maintains its normal flow. Large open area capacities afford free movement of fluids.

(Check item 4 on coupon for more information.)

5—Oil-Gas Separator

Superior Tank & Construction Company is offering a new model "S" gas-oil separator which contains many of the time-proven principles plus several new features. Outstanding is the 40-inch diameter sphere which is the receiving chamber for incoming oil-gas mixtures. The inlet to the vessel, being at the point of greatest diameter, affords a wide flashing area for primary separation of oil and gas. The cylindrical bottom reservoir is conventional with baffle protection for a float ball and sufficient depth to provide a suitable fluid seal between the gas area and the oil outlet. In the top of the cylindrical body is an assembly of vanes and baffles. By a special jetting system, the fluid thus separated is drawn off and discharged back into the separator. Overall height is 7½ feet and is available in three pressure sizes: 125, 250 and 500 pounds per square inch pressure capacity.



(Check item 5 on coupon for more information.)

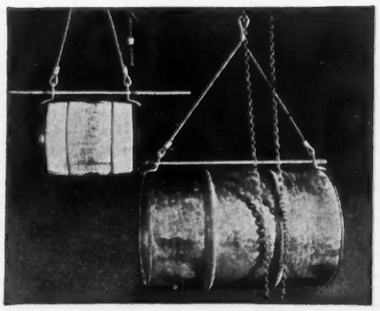
7—Water, Gas Extruder

"Resinox," a synthetic phenol formaldehyde compound, has been developed and tested by Oilwell Chemical Service Company and Monsanto Chemical Company for the special purpose of extruding incroaching gas or water in producing wells. This plastic material is said to be purely a homogeneous fluid having a viscosity in the range of 1.5 to 4.0 poises and a specific gravity ranging from 1.2 to 1.5. It has been used successfully in fields where the expanding gas cap has materially increased the gas-oil ratio. In such cases, the gas-oil contact has been squeezed with this plastic material, which is claimed to harden within eight hours, and an effective seal is made. It is also applicable in the case of extruding water from producing wells. After it hardens, Resinox resembles the plastic material from which so many commercial products are being made today.

(Check item 7 on coupon for more information.)

8—Sling Kits

A further development of the trylon safety sling kits for all light weight lifting has been introduced by the Wire and Cable Division of the Wind Turbine Company. Specifically designed for the hoisting of drum type containers, the trylon safety drum sling makes possible the handling of heavy drums, barrels, kegs, chemical and oil containers, large cans, and similar items. Heavy clips mounted on a rod with an adjustable pressure spring at each end grip the container securely until it is deliberately released. The spacing of these clips can be quickly altered and put in place to fit any size barrel, drum or keg. The sling is equipped with 5/16-inch plow steel wire rope and has a minimum breaking strength of 8000 pounds. The entire assembly is hot-dip galvanized to prevent rust.



(Check item 8 on coupon for more information.)

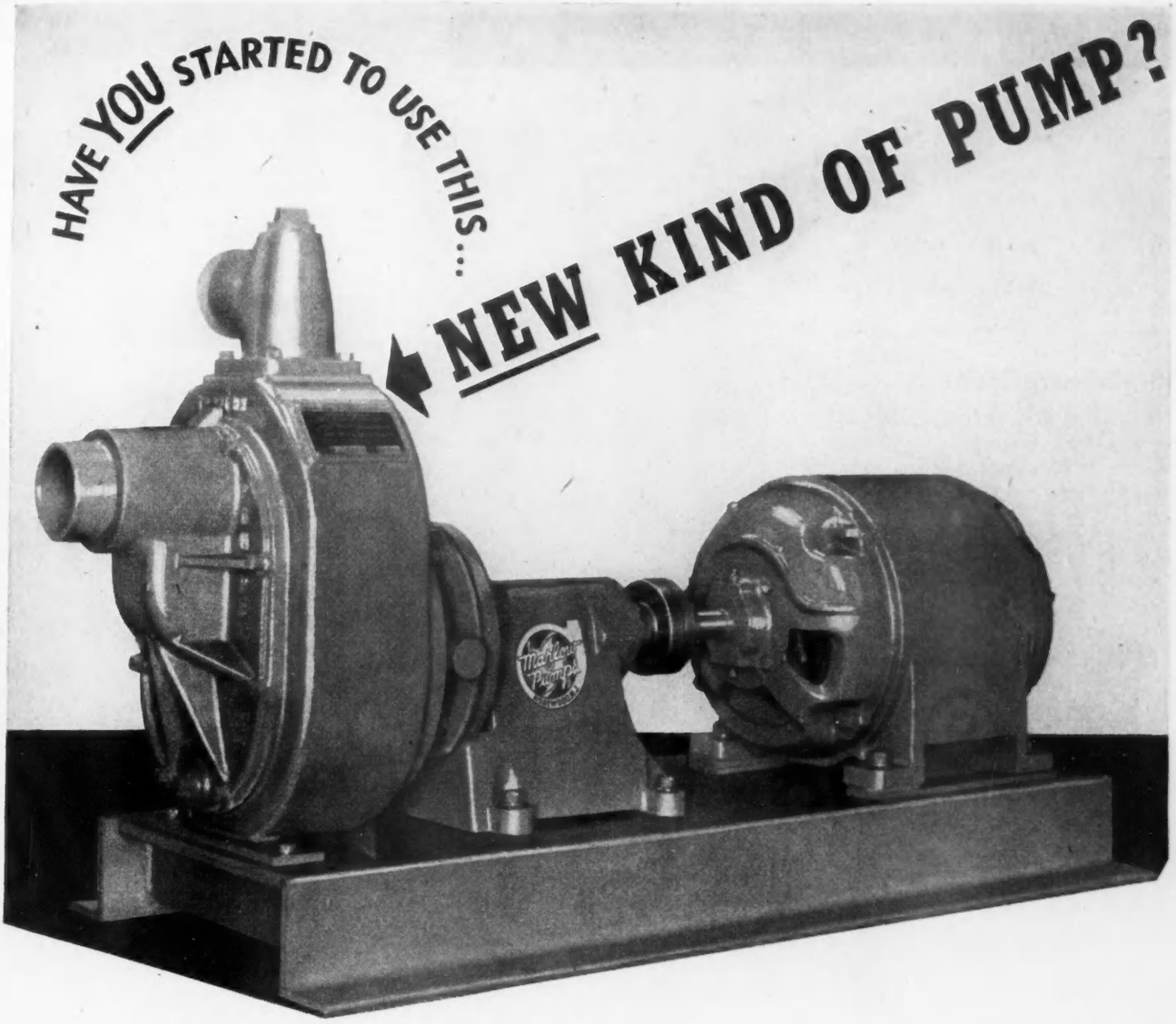
9—Traveling Block, Hook

Big Four Machine & Supply Company has introduced an improved streamlined traveling block and hook for slim hole rigs. The block and hook are combined in one unit to eliminate conventional bails and becket. Sheaves are equipped with roller bearings and conform with the contour of the spacer plates. The

6—Rotary Rock Bit

A rotary rock bit 30 inches in diameter has been designed and manufactured by Engineering Laboratories, Incorporated. Similar bits are now making hole in West Texas. The bit, weighing over 2000 pounds, is considered to be the largest rock bit now in production to drill a 30-inch hole, using a 12-inch tri-cone pilot bit. This bit will be used chiefly in drilling hard formation in the water well industry for irrigation of arid areas. For a visual comparison of the huge bit, note the workman who is giving the bit a final check before being sent to the field.

(Check item 6 on coupon for more information.)



★ NEW EFFICIENCY

You can expect increased efficiency when you use a Marlow Diffuser-Priming Centrifugal. The exclusive Marlow diffuser method of self-purging has eliminated the usual ports, by-passes and other auxiliary devices that reduce efficiency and cause maintenance problems.

A Marlow purges positively and automatically even on high suction lifts; gravity flow to the pump is not required. It will operate in intermittent service, purging itself whenever necessary.

★ NO VAPOR-LOCK

Because of its simplified design, a Marlow Self-Purging Centrifugal can handle highly-volatile liquids without vapor locking.. A Marlow is easy to operate—it has no parts that require adjustment or manipulation.

★ DEPENDABLE

A Marlow is economical and is endowed with the stamina to continue dependably in long, hard service. Models are made with electric, gasoline or Diesel power, in 1½ to 10-inch sizes, with capacities of 70 to 5700 barrels per hour. Detailed information sent promptly.

- ★ Positively self-purging on suction lifts. Combines centrifugal efficiency with automatic action.
- ★ Handles volatile liquids as easily as most pumps handle water. Will not vapor-lock.
- ★ Impeller alone moves the liquid.
- ★ Patented stationary diffuser within the pump assures self-purging without recirculation or wasted motion.
- ★ Fitted with dripless seal. It is self-compensating for internal pump pressures.
- ★ No parts which require adjustment or manipulation.
- ★ Strong, long-life construction. Made to stand up far beyond ordinary job requirements.

MARLOW PUMPS ★ RIDGEWOOD, N. J.

Manufacturers of the World's Largest Line of Self-Priming Centrifugal Pumps

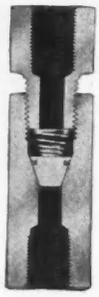
★ ENGINEERED BY MARLOW ★

outer plates are made of cast iron to provide necessary weight for faster falling. The full swivel hook operates on ball thrust bearings and is designed so that it may be locked in position while tripping. To prevent accidental disengagement of elevator or swivel bails, the hook is provided with a positive safety latch.

(Check item 9 on coupon for more information.)

10—Pressure Booster

A new 25,000-pound per square inch pressure booster has been announced by Martin-Decker Corporation which is claimed to employ a new packing assembly whereby a war-born method of sealing is utilized. This booster was developed for testing tubing and casing threaded connections and is designed to utilize either water or air pressure. A discharge pressure of 25,000 pounds per square inch may be developed from a pressure source of only 225 pounds per square inch. According to the manufacturers, no motors or pumps are required. It is equipped with a 25,000 p.s.i. check valve as shown. The pressure booster is available in various pressure ranges for operating on lower pressure sources.

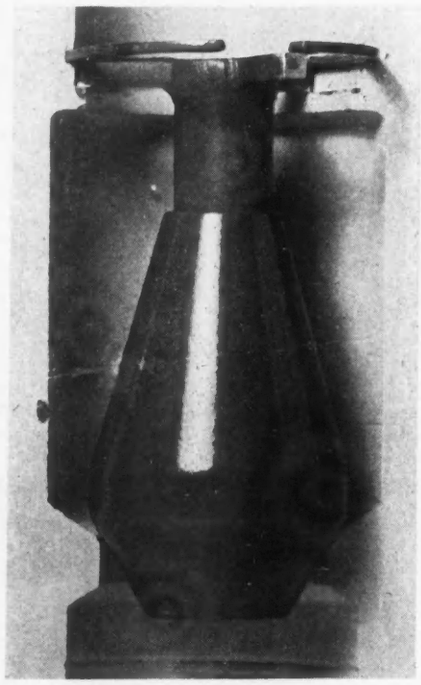


(Check item 10 on coupon for more information.)

11—Check Valve

Lightweight metals, simplified design, and precision machining have enabled production of this new poppet type check valve, manufactured by Greer Hydraulics, Incorporated. The unit is comprised of a valve housing, a hollow aluminum alloy poppet, an aluminum alloy poppet guide, a valve spring, and a "Truarc" retaining ring.

The valve completed a 50,000 cycle test, fully open to fully closed at 2000 pounds per square inch without appreciable wear on either the poppet or the seat. The unit has a burst pressure well over 8000 psi. The main features are lightweight, simplicity, no moving parts excepting for the poppet, and positive opening and closing action.



(Check item 11 on coupon for more information.)

12—Pipe Coupling

A new, relatively simple and easy-to-connect pipe coupling has been introduced by Krausse Manufacturing Company. Called "Nail-It," this new product employs unique coupling and sealing principles which are said to represent improvements over former methods. This coupling is joined by two or more common nails, driven into mating grooves cut in the male and female sections. These nails form a removable steel shear ring around the coupling and when installed under recommended working pressures, is claimed to have adequate safety factors.

A synthetic O-ring gasket forms a pressure-tight seal, and the manufacturer asserts that damage to the sealing surfaces will not affect the ability of these O-rings to seal, since the seal is made in the clearance between and not on these mating surfaces. "Nail-Its" are said to be free to swivel under low pressures and are recommended for temporary or permanent water, fuel or flow lines, manifolds, pump suctions, rotary hoses, mud guns and other installations. All couplings are tested to full rated pressures before shipment. Available sizes range from two through six inches for working pressures of 1000 to 3000 pounds per square inch.

(Check item 12 on coupon for more information.)

Literature

13—Pipe Line Cleaner

T. D. Williamson, Inc., is offering a descriptive catalog on jet rotation pipe line cleaning "pigs." Included in the booklet is descriptive and catalog data on the new type SB batching "pig" for the separation of crude oil and refined product batches in pipe lines. A complete description is given on Williamson pipe line casing bushings.

Available from the same company is descriptive and specification data in blueprint form concerning new mile-post markers for aerial patrol of pipe lines. The markers carry numerals eight inches high and four inches wide, and are available in both flag and fence post types.

(Check item 13 on coupon for more information.)

14—Plastic Coating

A booklet covering the newly developed acid and alkali proof plastic coating, "Nukemite," has been published by Nukem Products Corporation. The 12-page booklet, of standard notebook size, is printed in three colors and illustrates the varied applications of this war-born product. What it is and what it does in the way of providing a corrosive coating for tanks, vessels, walls and pipes are well described, and recommendations for applying this material are given.

(Check item 14 on coupon for more information.)

15—Engineering Data

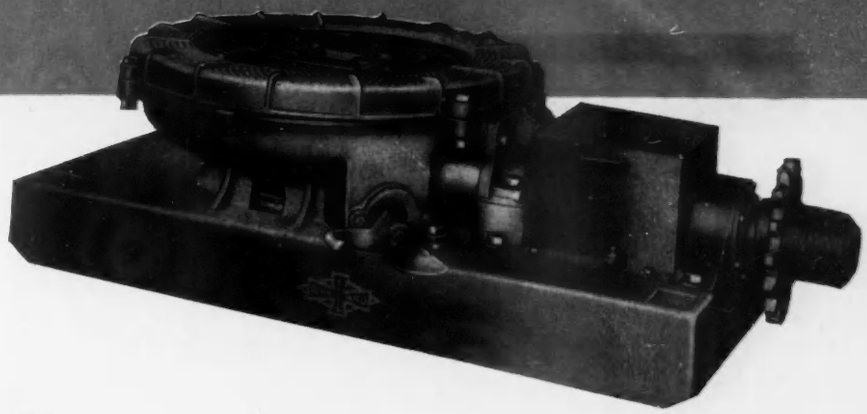
Weston Electric Instrument Corporation has issued a publication, "Weston Engineering Notes," which provides pertinent engineering information for users of electrical indicating instruments. The first issue featured articles entitled "The Galvanometer and the Bridge" and "Copper Oxide Rectifiers as Used in Measuring Instruments." It is expected that these publications will be on a bimonthly basis.

(Check item 15 on coupon for more information.)

16—Floor Maintenance

"It's Easy to Repair Rough, Rutted Floors" is the title of a new floor maintenance folder published by the Stonhard Company. Of interest to all petroleum plant owners, managers and engineers, this publication deals extensively with floor patches and overlays that are said to be lastingly resistant to oils, greases and acids. It describes how floors subject to such conditions are quickly and permanently repaired.

(Check item 16 on coupon for more information.)



Model A-18000-A,
27½" Triple Oil Bath
Rotary

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SWIVELS, ROTARIES and PUMPS

Wheland Oil Bath
Swivel Model E-7000

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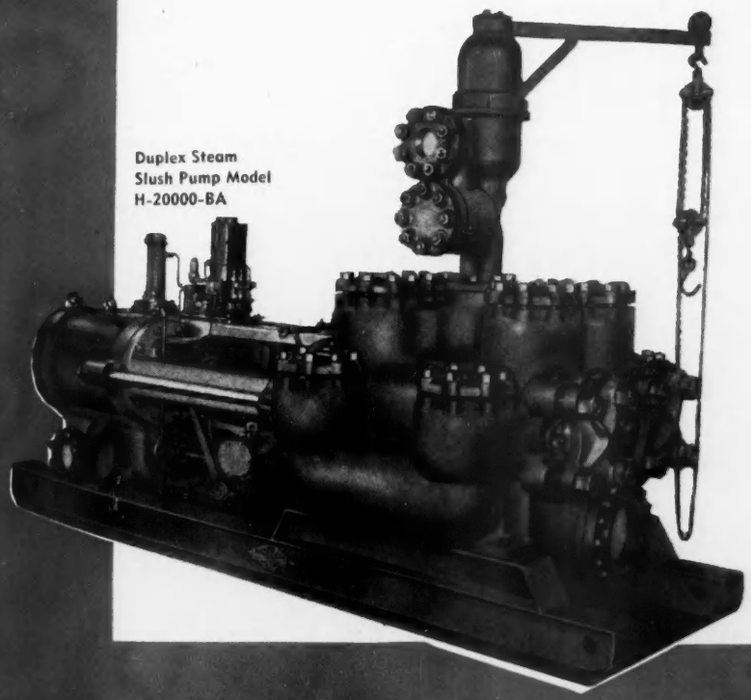
It's worth taking up with your Jones & Laughlin Supply Store. Well worth it. Or you could write us at Tulsa. You'll be as interested as we are.



Duplex Steam
Slush Pump Model
H-20000-BA

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J&L STEEL

TULSA, OKLAHOMA

U. S. Crude Production Drops Sharply; Runs to Stills Hit New High for Year

U. S. Crude production during the week ended July 6 was cut back considerably from the previous week, while runs to refinery stills were boosted to a new high mark for the year.

The week's output of gasoline and residual fuel oil showed a decrease from the last week, while production of distillate fuel oil was upped moderately. Stocks of gasoline continued to be reduced, but nearly 3 million barrels of the fuel oils were sent to storage. These trends were revealed in the latest statistical bulletin of The American Petroleum Institute.

U. S. production of crude dropped 52,000 barrels daily from the previous week's daily output to average 4,905,000 barrels daily during the week of July 6, which is 19,000 barrels a day more than was produced during the comparable week of last year.

Crude runs to refinery stills averaged 4,875,000 barrels daily during the week, showing an increase of 21,000 barrels daily over the previous week. These daily runs established a new high mark for the current year, but are 161,000 barrels less than those of the like week of 1945 and 265,000 barrels less than the all-time peak reached in mid-August of last year.

Crude oil stocks totaled 223,883,000 barrels on June 29, according to the latest report of the Bureau of Mines. This report shows that during the preceding seven days, in which production was substantially greater than still runs, crude stocks were increased by 1,690,000 barrels, and now stand at a level that is 3,102,000 barrels, or 1.4 percent, higher than stocks held a year ago.

Gasoline production, including natural blends, totaled 14,295,000 barrels for the week, a decrease of 205,000 barrels from the previous week, and 1,122,000 barrels, or 7.3 percent, less than the output of the like week of last year. Stocks of finished and unfinished gasoline were reduced 621,000 barrels during the week and now stand at 91,712,000 barrels, which exceeds stocks of a year ago by 5,571,000 barrels, or 6.5 percent.

The week's output of distillate fuel oil topped the previous week's by 251,000 barrels to total 5,576,000 barrels, an increase of 608,000 barrels over the like week of last year. Stocks of distillate fuel continued their seasonal increase by rising 1,632,000 barrels during the seven days to a new year's high of 39,394,000 barrels, which is 5,737,000 barrels, or 17 percent, more than was on hand a year ago.

Residual fuel oil production for the week totaled 8,366,000 barrels, a drop of 462,000 barrels from the previous week, and 1,052,000 barrels less than was produced during the corresponding week of last year. Stocks of residual fuel were increased 1,296,000 barrels, bringing the total to the year's high of 47,743,000 barrels. This new level is 6,778,000 barrels, or 16.5 percent, higher than the 40,965,000 barrels on hand a year ago.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod		Runs to Stills		Crude Stocks		Gasoline Stocks		Gasoil and Distillate Stocks		Residual Fuel Oil Stocks	
	Barrels Daily	Week Ended	Barrels Daily	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	47,861	11-14	95,857	1- 8
1943	4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	47,187	11-27	72,881	1- 2
1944	4,762	9-30	4,798	12-30	240,992	1- 1	89,162	4- 1	48,162	10-28	64,744	10- 7
1945	4,944	7-21	[1]5,140	8-18	227,554	10-13	99,012	3-24	45,341	11-17	56,074	1- 6
1946	[1]4,961	6-15	4,875	7-6	229,430	3- 2	105,233	2-16	39,394	7- 6	47,743	7- 6
Lows:												
1939	[2]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 3
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,382	4-12	90,914	7-13
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-18	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,228	2-12	220,258	9- 9	76,302	1- 1	30,232	4-19	49,737	3-18
1945	3,621	10- 6	3,409	10- 6	[4]211,813	8-25	70,791	10-13	26,483	3-17	38,548	5-26
1946	4,403	3- 9	4,498	1-12	218,193	1- 5	91,712	7- 6	25,131	3- 9	37,289	4- 6

TRENDS OF 1945 AND 1946

Trends in Week Ended	Crude Oil			Gasoline		Gasoil and Distillate		Residual Fuel	
	Production Daily	Runs to Stills Daily	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End
1945:									
January 27	4,727	4,756	221,310	14,957	88,223	4,843	33,561	9,252	51,119
February 24	4,777	4,803	219,351	15,500	95,972	4,958	28,753	9,084	46,713
March 31	4,781	4,677	223,782	14,644	98,758	4,548	26,889	9,184	41,745
April 28	4,805	4,780	223,474	14,633	94,068	4,636	28,273	9,379	39,813
May 26	4,887	4,950	222,831	15,194	89,121	4,667	29,184	9,670	38,548
June 30	4,903	4,999	220,781	15,546	86,472	4,910	32,213	9,077	40,488
July 28	4,930	4,996	218,507	16,106	86,008	4,598	36,071	9,586	42,283
August 25	4,892	4,931	[4]211,813	15,986	84,693	4,960	39,782	9,356	46,201
September 29	4,357	3,812	222,387	11,913	79,552	3,940	43,689	7,047	46,853
October 27	4,273	4,838	224,230	15,530	74,335	5,159	43,472	8,691	45,943
November 24	4,469	4,648	219,363	15,681	83,184	4,802	45,258	8,800	47,474
December 29	4,474	4,729	218,918	14,546	95,205	5,055	36,651	8,765	42,447
1946:									
January 5	4,548	4,651	218,193	14,488	98,494	5,293	35,199	8,867	42,371
January 26	4,626	4,553	220,544	13,622	101,737	5,720	29,498	8,411	39,722
February 23	4,714	4,595	226,699	13,175	104,709	5,728	25,398	7,913	39,290
March 30	4,425	4,684	224,994	13,896	104,715	5,357	28,240	8,738	37,746
April 27	4,672	4,685	224,443	14,228	99,631	5,568	30,466	9,204	39,404
May 25	4,759	4,857	222,214	14,322	95,769	5,463	32,973	8,908	43,368
June 29	4,957	4,854	223,883	14,500	92,333	5,325	37,762	8,828	46,447
July 6 1946	4,905	4,875	.....	14,295	91,712	5,576	39,394	8,366	47,743
July 7, 1945	4,886	5,036	[5]220,781	15,417	86,141	4,968	33,657	9,418	40,965
Change:									
In Week	—52	+21	+1,690	—205	—621	+251	+1,632	—462	+1,296
In Year	+19	—161	+3,102	—1,122	+5,571	+608	+5,737	—1,052	+6,778
In Year	+0.4%	—3.2%	+1.4%	—7.3%	+6.5%	+12.2%	+17.0%	—11.2%	+16.5%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922 due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, June 30, 1945.

Pan American Buys Wells

Pan American Production Company purchased General American Oil Company of Texas' interest in 16 wells in the Hawkins townsite in the Hawkins field, Wood County, Texas. General American's interest in these wells is equivalent to 14 full ⅞ working interest wells.

Completion of the deal is contingent upon approval of title to the properties by Pan American's attorneys.

Natural Gas Rate Set

The Federal Power Commission has accepted new rate schedules filed by Canadian River Gas Company for natural gas sold to Colorado Interstate Gas Company, in conformity with the Supreme Court decision of April 2, 1945, reducing charges by not less than $551,000.

The schedule provides a rate of 3.5 cents per MCF, plus certain transportation charges of about one cent per MCF, for gas sold to Colorado Interstate at Gray, Okla., for resale to Natural Gas Pipeline Company of Americe, and a rate of four cents per MCF for gas sold to Colorado Interstate at Clayton, N. M., for resale to its customers in Colorado.

☆ Oklahoma

Carter Reports New Pay Zone in Iron Chapel Pool

State's deepest test shows good strains and odor; Chitwood outpost gets oil show; Superior Oil may drill test to 18,000 feet; Carter's Mottinger opens new pay zone in Iron Chapel pool; Southwest Inola area activity picking up; new oil field opened west of Garber area.

Grady County: Oklahoma's deepest test, and the most closely-watched wildcat, George P. Livermore, Incorporated's Giles Ranch 1, CNW NW 35-8n-5w, on the Middleburg high southwest of Blanchard, had good stains and odor, and while drilling at 11,370 feet, had a good show of gas and oil on the pits. The test is now coring at 12,093 feet in the Wilcox sand. The wildcat, situated in the heart of the huge Anadarko Basin, reported staining and gas odor in cuttings from 12,071 to 12,076 feet. There have been several shows of oil and gas but the test is being deepened in hopes of more favorable showings.

Chitwood Area: The state's second deepest test, Magnolia Petroleum Corporation's Spiers 1, CSW SW 28-5n-6w, in the productive Chitwood area of Grady County, showed oil on a drill stem test. It is situated in an area of deep gas-distillate production. With packer set at 11,382 feet, the test ran for three hours and had a small show of gas at the surface. Tool was pulled and break-down showed 525 feet of oil-cut mud and 15 feet of 40-gravity oil. Bottom hole pressure was 1350 pounds. Total depth is in tight sand at 11,505 feet. Crew is conditioning mud at 11,481 feet.

Caddo County: Superior Oil Company of California's Mary Howe 1, NW NW SE 11-18n-12w, near Fort Cobb, also in the center of the Anadarko Basin, is making slow progress below 9200 feet. Officials are contemplating drilling the test may go to 17,000-18,000 feet, if equipment can be fabricated to withstand such deep drilling. Many oil operators are inclined to believe that oil will be found in the Cherokee section of the Pennsylvanian, where Amerada Petroleum Corporation had a good showing on a well four years ago at around 10,000 feet. If the Howe proves to be a producer, it will open a large oil and gas area. Drilling is being done by Superior's own tools, and the rig is the largest ever used in Oklahoma.

McClain County: The Carter Oil opened up a new pay zone at its Mary Mottinger 1, CNW SW 5-6n-3w, in the Iron Chapel pool when the well was plugged back from Bromide to the Bois d'Arc section of the Hunton lime. Perforations were made in 7-inch casing at 9967-10,030 feet, and acidized with 5000 gallons. The well flowed out the load and made 300 barrels of new oil in 16 hours through a ½-inch choke, cutting 20 percent acid-water and mud. The well was drilled to 11,006 feet, total depth, and plugged back to 10,300 feet for testing. On latest test the well flowed 381 barrels of oil in 17 hours, through ½-inch chokes on tubing. The well was completed originally in the Wilcox sand zone, with a flow of 1050 barrels of oil per day, making it one of Oklahoma's major strikes of the year.

Rogers County: Shallow gas and oil production in the new Southwest Inola area of southeastern Rogers County, opened early this year by C. P. Quinlan of Tulsa, is increasing with several companies buying up lease spreads. The Sand Springs Home Interests, Sand Springs, Okla., has contracted to start one or more test wells south and east of Quinlan's discovery lease, in SE SE 25-19n-16e. The Home has acquired about 2000 acres in Sections 19n-16e, and 19n-17e. Quinlan has two 25-barrel producers and the wells are making a million feet of gas a day. A. T. Campbell, on the southeast side of the structure, got a 4 million-foot gasser in CSE SE 18-19n-17e, with total depth at 407 feet.

Garfield County: Ross Porter et al, Shawnee, Okla., has opened a new oil field 4 miles west of the old Garber area, with Siegle 1, NE SE SW 32-23n-4w. The wildcat was drilled by J. E. Crosbie, Incorporated, to get the second Wilcox sand at 6048 feet and on test at 6048-60 feet it had 30 feet of oil. Porter and associates took over the well and the 160-acre lease on which it is located. Pipe was set at 6116 feet, with a securaloy section opposite the sand. Pay was shot at 6058-63 feet, with eight quarts of nitroglycerine and 4000 marbles. The well swabbed five barrels of oil per hour into pits for three days, then was shut in 62 hours to move in a 100-barrel tank. After swabbing 20 barrels of oil the well kicked off and flowed 80 barrels through casing by heads. Operators shut in to run tubing.

Kansas Production Up

Wartime production levels are indicated for Kansas oil fields by the 270,000-barrels-a-day allowable for July, recently approved by the Kansas Corporation Commission.

T. A. Morgan, conservation director, recommended the 10,000-barrels-a-day hike over June allowable because of increased demand.

Wells Completed in the United States in Week Ended July 13, 1946

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second or third issue of each month. More detailed data on wildcats published in third or fourth issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative This Year	Cumulative Last Year
Alabama													8	19
Arizona													1	
Arkansas	1	1			2						2	7	98	96
California	32	1		1	34	1			3	3	38	40	1,023	1,155
Colorado	2				2				2	2	4	1	69	15
Florida												1	12	10
Georgia													2	5
Illinois	26			10	36		2		7	9	45	57	1,093	929
Indiana	8			9	17			1	3	4	21	8	237	172
Iowa														1
Kansas	23	1	2	8	34	1	1		5	6	41	32	1,086	857
Kentucky	8			7	15	1	1		2	3	19	9	302	255
Louisiana	7			4	11				7	7	18	19	666	535
North Louisiana	6			4	10				3	3	13	13	360	182
South Louisiana	1				1				4	4	5	6	306	353
Michigan	7			12	19		4		10	14	33		401	397
Mississippi	1				1			1		1	2	4	124	203
Missouri													12	25
Montana	2	1		1	4		1		2	3	7	4	135	110
Nebraska														3
New Mexico	4	1			5						5	7	212	240
New York	15		10		25						25	25	587	573
Ohio	5	11		8	24				1	1	25	38	603	480
Oklahoma	29	3		14	46	4	1		2	3	53	75	1,355	1,257
Oregon													2	
Pennsylvania	27		15		42						42	52	1,598	1,680
Tennessee													3	2
Texas	77	4		26	107	4	1		25	26	137	152	4,296	3,881
E. Tex. Bor. Co.'s	1			3	4						4	2	84	42
Rest of E. Texas	6				6				1	1	7	6	282	118
North Texas	29			9	38	2			10	10	50	42	1,279	903
W. Central Tex.	1			6	7				1	1	8	19	320	249
West Texas	16			5	21				4	4	25	40	883	998
Tex. Panhandle	1	3			4	1			1	1	6	2	209	313
G. Coast, Upper	2				2				1	1	3	8	349	376
G. Coast, Lower	20	1		1	22				3	3	25	19	594	561
Southwest Texas	1			2	3	1	1		3	4	8	10	221	270
S. Central Tex.									1	1	1	4	75	51
Utah													2	
Washington													1	
West Virginia												18	374	422
Wyoming												5	83	76
Total U. S.	274	23	27	100	424	11	11	2	69	82	517	554	14,385	13,298

* Includes distillate wells. † Includes salt water disposal wells.

☆ Kansas

Pawnee County Gets New Pool Southwest of Ryan

Stafford County wildcat looms as pool opener; wildcat gives Pawnee County a new oil pool; Marion County discovery well being tested; Stanolind gives Hugoton gas field extension to west.

Stafford County: What appears to be a new pool opener is Virginia Drilling Company et al's Roberts 2, CWL SW SW 14-21s-12w. Situated 2½ miles northwest of the Sittner pool, the test had a good oil showing in the Arbuckle lime. Total depth is 3551 feet, and testing continues.

Pawnee County: The county definitely has a new pool opener in Brack & Huber's Rutherford 1, SW NE NW 8-20s-16w, southwest of the Ryan pool and 10 miles north of Pawnee. When plug was cracked at 3923 feet in the Arbuckle lime, the hole filled with 3000 feet of oil in 30 minutes. Testing continues. Twelve hundred feet of oil rose in the hole on a previous test.

Marion County: Anderson - Prichard Oil Company has started testing its discovery well, the Warkentine 1, SE SE NW 27-19s-1e, at the west edge of Lehigh township, 2 miles northeast of the Bitikofer oil pool in McPherson County. Both oil and gas were found in the Mississippi chat from 2806-2828 feet. The discovery is estimated good for from 7-15 million cubic feet daily, and operators are looking for a combination oil and gas completion.

Grant County: Stanolind Oil & Gas Company has given the Hugoton gas field an extension to the west at the Federal Lank Bank 1, in the center of 31-28s-38w. After taking tools to 2608 feet, operators plugged back to 2573 feet in the Fort Riley sand and tested through perforations opposite three gas formations. Following acid treatment the well produced 1,730,000 feet of gas in a 20-minute test.

Pratt County: The Stoops pool opener, Bridgeport Oil Company's Stoops 1 "A", SEC SW 7-29s-12w, recently was assigned a state potential of 793 barrels of oil a day. The well, originally given an allowable in April as a minimum well, made its potential on flow test from the Viola lime, drilled to 4552 feet, total depth. The new pool is 4¾-miles southwest of nearest production in the Chitwood pool, and about the same distance southeast of the Ludwick pool, not now prorated.

Jones, Shelburne & Farmer, Inc., of Oklahoma City and Great Bend, Kansas, has been awarded the contract to drill a wildcat for Sohio Petroleum Company in Sect. 31, Township 17 South, Range 11 West, Barton County, Kansas.

☆ New Mexico

Three Operations Assigned To Eunice Townsite Area

Three new operations assigned Eunice townsite area; Brunson field prospect fails to respond to acid and nitro.

Three new operations assigned Eunice townsite area fails to respond to acid treatment and nitro.

Lea County: Amerada Petroleum Corporation's Hare 2, C NW SW 33-21s-37e, 1¼ miles west by south of nearest Yeso production in the Eunice townsite area, flowed 175 barrels of 38-gravity oil, with gas-oil ratio 1137/1, on 9-hour natural test through ½-inch choke. This production is from Yeso perforations at 6490-6602 feet. The company will next deepen Hare 1, an offset. Magnolia Petroleum Company will deepen Carson G. North, offset to the above Yeso producer. Magnolia's Marshall Unit 2, deepened regular Permian well. and flowed 1368 barrels initial through open tubing after acidizing Yeso perforations at 6460-6608 feet, and has spudded Marshall 5, a north offset.

Paddock Field: Repollo Oil Company's State 1, Lease 367, north offset to production but a failure in the Glorietta, was drilling lime at 6380 feet. The company's Simmons 1, northeast outpost, was drilling lime at 6870 feet.

Brunson Field: Magnolia's Brunson-Argo 12, southeast edge of the Ellenburger producing area and higher structurally, failed to take acid in open hole at 7395-7471 feet. Nitro shot at 7445-65 feet also failed to result in oil flow on preliminary test. This well entered the Ellenburger at 7345 feet, and granite at 7463 feet, with a large portion of the Dolomite pay cut out.

☆ West Texas

Menard County Wildcat Shows For Pennsylvanian Producer

Isolated Menard County wildcat showing for oil producer; TXL multi-pay field and Ellenburger sector of the Keystone field have recorded 100 producers each; 3 wildcats on short-term leases in Andrews County abandoned.

Menard County: Warren Petroleum Corporation and T. F. Morrow's Ruby Russell 1, C NE NE Sect. 18, A. B. & M. and S. Walleck Survey, A-1478, was awaiting production test after indicating oil production from Pennsylvanian sand, topped at 2281 feet. This isolated wildcat yielded gas to the surface within 8 minutes when a drill-stem test was made at 2309 feet, and the recovery consisted of 390 feet of oil and 20 feet of oil- and gas-cut mud. Seven-inch pipe was cemented at 2281 feet. Owners have a supporting block of 10,000 acres acquired on geology worked by Floyd C. Dodson, San Angelo consultant.

Andrews: County: Placid Oil Company and Gulf Oil Corporation's Thornberry 1, 4⅓ miles northeast of Ellenburger production in the Martin field, appeared to be a failure after swabbing 40 barrels of fluid hourly, averaging 5 percent oil and the balance salt water. The fluid rose to within 500 feet of the surface. Production was from perforations at 11,941-55 feet. The partnership is starting a second deep test 2½ miles east.

Skelly Oil Company's 3 wildcats on adjoining 160-acre leases between the Martin and Three-Bar fields have been ordered abandoned. The company's University 1-Z, the deepest, was drilled to 9212 feet, and made an unsuccessful attempt to revive oil flow passed up in the Wolfcamp.

The Texas Company's University 1-P, prospective oil discovery from the Clear Fork (Fullerton) for the Block 12 structure, failed to encounter Devonian in drilling to 8404 feet, and will be plugged back to set 7-inch casing near the 7400-foot level for completion through perforations. It has about 125 feet of effective pay in the Clear Fork, topped at 7140 feet. Preliminary work is under way on 2 additional tests by the company, with another scheduled, while The Atlantic Refining Company and The Superior Oil Company are starting 2 each, and will announce more shortly. All require production by November 14.

Fullerton Oil Company's Wilson 342-A, ½ mile east of its Ellenburger discovery for the Fullerton field, cemented pipe at 9783 feet, or 3 feet in the Ellenburger, and will complete from open hole to 9890 feet. It is 113 feet high to the discovery, which drilled only 40 feet into the zone as a safeguard against water.

Ector County: Cities Service Oil Company's Parker-Wentz 1, ¾ mile southwest of the Harper field, entered the Ellenburger at 12,480 feet, and was running a drill-stem test at 12,529 feet. This marker correlates 3400 feet low to the Ellenburger discovery for the Penwell field, situated 6 miles southwest. Pipe will be run for production test of prospective production in the Silurian and Devonian, if the Ellenburger proves dry.

E. E. Fogelson and Cosden Petroleum Corporation's University 1-C-D, 1⅞ miles southeast of the Ellenburger discovery for the Penwell field, was drilling at 7460 feet, with porous zone in the Silurian due within the next 100 feet.

Stanolind et al's Kayser Unit 1, 1¼ miles southwest of the South Cowden field, was drilling lime at 12,530 feet in Silurian, topped at 12,410 feet, correlating 1399 feet low to the deep test near the Harper field.

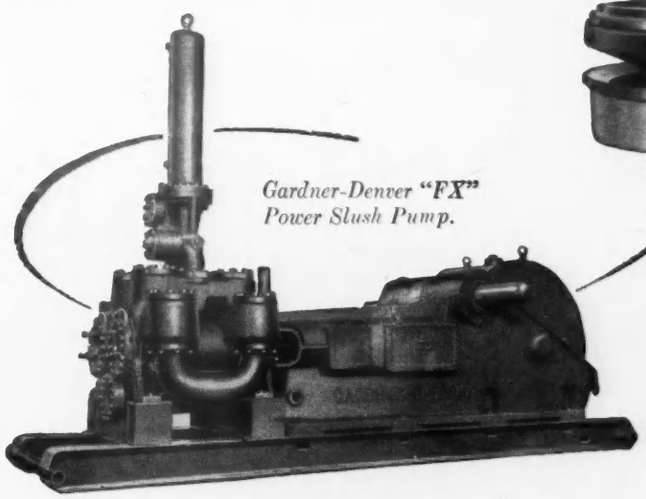
The Texas Company's Parker 1-C extended the TXL field ¼ mile south in flowing 832 barrels of 39.5-gravity oil initial through ½-inch choke from Devonian perforations at 7705-7895 feet. Top of the Devonian is about flat with the offset, indicating that the trend of production to the south is open. Rowan Drilling Company is starting a south offset.

Total producers in the TXL field passed the 100 mark the past week, and another 100 wells are likely to be completed before the structure is fully developed. However, future completions will be predominately Ellenburger wells. The field has 68 Devonian and 32 Ellenburger wells, while it has a marginal pumper in the Wolfcamp. The T.P. Land Trust has 41 Devonian and 20 Ellenburger producers on its fee, and also an Ellenburger producer across a fault on the southeast side of the field.

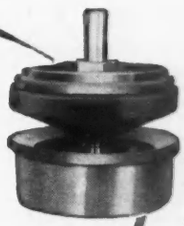
Garza County: Northern Ordnance, Inc.'s Walker 1, SE SE SE H&GN Ry. 46, Block 6, resumed testing broken saturation in San Andres at 2440-75 feet after oil appeared while awaiting orders to deepen. This wildcat was cased with 8⅝-inch at 2410 feet to be prepared to make a deep test.

Block 31 Field: Atlantic is ahead of schedule in the development of 18 160-acre University leases near its dual-pay discovery to forestall November 14 lease expirations. The company has 7 dually completed wells, and same number flowing from the Devonian, while a single failure involves University 1-T, ½ mile southeast outpost plugged at 9210 feet.

"Slush Proof" Piston Rods, made of high-grade alloy steel, are case hardened at points of wear. They are ground on centers to provide absolute straightness.



Gardner-Denver "FX" Power Slush Pump.



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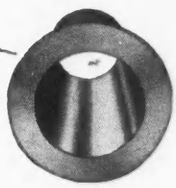

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Nitro shots were used unsuccessfully in the Devonian, topped at 8370 feet, or 272 feet low to nearest producer. Two drilling tests by Phillips Petroleum Company and one by Champlin Refining Company are within the producing area. The productive area is due for expansion to the southwest and also to the east. No decision has been made as to whether extra wells will be drilled on the 160-acre leases. The University of Texas, owner of the full royalty interest, may insist upon closer spacing.

Winkler County: Hunt Oil Company's Hill-Gulf 1, 1⅝ miles east of the Weiner field, showed water on preliminary test of perforations at 6185-6220 feet in the Clear Fork (Tubb), topped at 6076 feet. It will be perforated higher by stages to establish the oil-water contact near the 6200-foot level. It was drilled to 8821 feet, then cemented pipe at 6283 feet.

Sun Oil Company's Keystone 2, Silurian discovery pumper for the Keystone field after plugging back from dry Ellenburger, was showing for a flowing producer from Devonian perforations at 8035-8126 feet. The well responded to treatment with 4000 gallons of acid by flowing 124 barrels of oil, including a small amount of acid load, on 12-hour test through ¼-inch choke. Total oil yield from the Silurian amounted to only 9700 barrels during the year it was pumped. It is 5¼ miles northwest of the field's only Devonian completion, but numerous Ellenburger wells have passed up flowing production in this zone.

Ellenburger producers in the Keystone field reached the 100 mark the past week, and operations are under way on 24 tests. All wells, excepting 3 penalized for excess gas-oil ratio, are prorated to 483 barrels daily each. The output of this premium quality crude is nearing the capacity of the double 8-inch pipe line providing the market outlet, and may be held near the present level for some months by applying additional production holidays. However, one or more sweet crude lines will be built into the area early next year. The outlook is for the eventual completion of a total of 200, or more, of Ellenburger wells under the 40-acre spacing rule.

☆ North Texas

Young County Gets Flowing Discovery from Mississippian

Young County has flowing discovery from the Mississippian, and second strike pending; National multi-pay field has second failure; Montague County wildcat will test nominal shows in Bend.

Young County: A. R. Dillard et al's Killian 1, NW NE TE&L Company 211, 1⅞ miles east by south of the Crain deep area, flowed 17 barrels of oil hourly natural through ½-inch choke from perforations at 4944-60 feet in Mississippian, topped at 4940 feet. Official gauge was pending. This discovery indicated probable production in the Bend, topped at 4212 feet. Rig has been skidded ¼ mile east for Killian 2.

Robert C. Davis and associates' Baldwin-Lovett 1, near center of NW¼ TE&L Co. 207, and 2 miles southeast of the Killian strike, was preparing to perforate after flowing oil on drill-stem test of Mississippian saturation at 4833-64 feet. This wildcat logged nominal saturation in the Bend, topped at 4064 feet.

Wilbarger County: Bishop Oil Company's King 1-C, SW SE SW H&TC Ry. 44, Block 13, defined the National field to the northeast in failing to indicate production in drilling at 5460 feet.

Montague County: Dave Bennett and J. W. Sorrells' Milton 1, Block 13, Titus County School Lands, and 6 miles east by north of Sunset, drilled barrel Ellenburger to 8017 feet, and has cemented pipe at 7641 feet to perforate opposite nominal saturation in the Viola and Bend.

Grayson County: Standard Oil Company of Texas' Mitchell 1, Sherman prospect, was drilling Simpson at 9560 feet without shows since penetrating the Strawn series. Change of formation was recorded at 9264 feet.

Texas Resources Movie

The U. S. Bureau of Mines has released an educational sound movie, "A Story of Texas and Its Natural Resources," a 16-mm., 57-minute film in two parts depicting the state's petroleum resources, refineries, natural gas and helium processing. The numerous other mineral industries complete the first part. Part two dwells on water resources, agriculture, communications and cities. The film is available under usual Bureau of Mines policy from the Graphic Services Section, 4800 Forbes Street, Pittsburgh 12, Pa.

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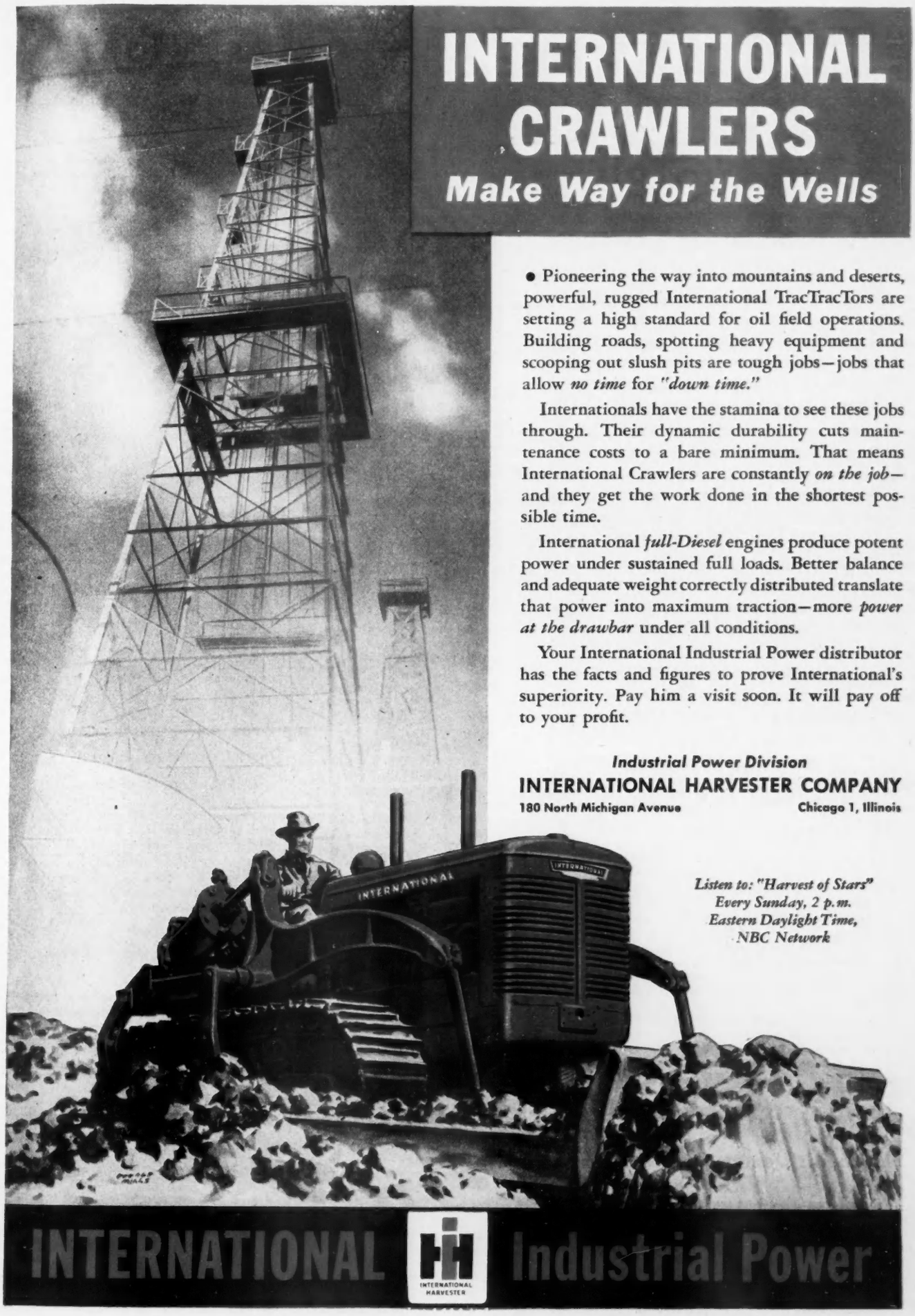

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☆ East Texas

Offset to Mount Sylvan Strike Is Low on Woodbine Marker

Offset to Mount Sylvan field discovery is low on Woodbine marker; Limestone County deep prospect will test several promising zones of porosity; Hunt County wildcat coring Rodessa series.

Smith County: Humble Oil & Refining Company's Dowell 1, east offset to its Mount Sylvan field Paluxy oil discovery, was drilling at 5970 feet. The Woodbine was topped between 5081 and 5112 feet, and correlates about 50 feet low. The company's third scheduled test is being held up to await the outcome of Dowell 1.

Freestone County: O. W. Killam's Fee 1, Antonio Sanchez survey, a wildcat, was abandoned in Woodbine water sand at 5225 feet.

Hunt Oil Company's Andres-Pure 1, Jacksonville prospect, was fishing for drill pipe at 9817 feet in Travis Peak, topped at 9660 feet. The Texas Company's White 1, Smackover test for the Fairfield gas field, was drilling at 8930 feet in Travis Peak, topped at 7905 feet.

Wildcats: K. L. McHenry et al's Neely-Magnolia 1, J. E. Clark survey, Hunt County, recovered stuck drill pipe and was drilling Rodessa at 4780 feet. In Ellis County, L. H. Hughey and S. L. Carpenter's Fealer 1, J. D. Clairborne survey, prepared to deepen after recovering slightly brackish water from Travis Peak sand at 2847-3007 feet. Delta Drilling Company et al's Houston-Magnolia 1, Martins Mill prospect, topped the Pecan Chalk between 2805 and 2835 feet, and was drilling shale at 3390 feet.

Anderson County: Tex Harvey Oil Company's Hall 1, wildcat 6 miles south of Palestine, was abandoned at 6524 feet in Buda, topped at 6504 feet. The Woodbine was entered at 5520 feet and penetrated for geological information, although water was found in the top section.

Limestone County: C. W. Killough et al's Arnet 1-a, wildcat 5 miles northwest of Groesbeck, has cemented pipe on bottom at 5825 feet in Travis Peak, topped at 5563 feet. Electrical formation survey recorded fair to good porosity in the Pettit, topped at 5430 feet, and 2 upper zones.

Wood County: Humble Oil & Refining Company's McKnight et al 1, W. R. James Survey A-335, projected Smackover test for the northeast flank of the Hawkins field, was drilling sandy-shale at 5175 feet in Woodbine, which tested water.

Amerada Petroleum Corporation et al have applied for permit to drill a second 8100-foot Basal Rodessa gas-distillate well in the Coke field. Operators have unitized their deep rights for the development of this deep pay, which will be utilized in repressuring the Paluxy oil zone.

Florida Has Upsurge in Both Leasing and Wildcatting

An increase in both leasing and drilling activity in Florida is indicated at the end of the first six months of 1946. Humble Oil & Refining Company is the largest leaseholder in the state, having 5,665,000 acres under contract; Gulf Refining Company is second with 4,765,000 acres; the Arnold Account is third with 4,563,000 acres; Sun Oil Company is the fourth largest leaseholder; Magnolia Petroleum Company, fifth, has leased 1,082,500 of its 1,683,500 acres as state leases; Stanolind Oil & Gas Company rates sixth with a spread of 1,198,000 acres.

More acreage has been leased in Monroe County than any other. Of a total of 3,595,000 acres leased, 2,553,000 are held by Gulf, with seven other companies represented. Collier County, where Sunniland field is located, has 1,421,000 acres under lease by seven firms. Levy County's 869,000 acres are divided among ten interests. Walton and Washington counties have the most representation among companies and individuals. Some 15 different interests have accounts in each.

Wildcatting in Florida has been led by The Pure Oil Company. Twelve tests have been drilled this year in an equal number of counties with 10 operations now under way.

☆ East Texas Border

Wheland Field Outpost Is Abandoned by Operator

Wheland outpost, Harrison County, abandoned after salt water shows on drill-stem test.

Rogers Lacy's outpost test Baker 1, Albright Survey, Wheland field, 2½ miles north of Harleton, was abandoned at 6857 feet, without shows. This well is 2½ miles northeast of pool limits. Lacy's Key 1, A. Crocker Survey, 14½ miles south of Marshall, is drilling below 6350 feet.

Rig was going in for a Woodbine or deeper test 3 miles east of Marshall, Humble Oil & Refining Company's C. Lebore 1, F. Hill Survey.

Magnolia Petroleum Company had derrick up for a planned 12,000-foot test on Southern Pine Lumber Company acreage, Leonard Williams Survey, in the Weches area.

Bert Fields' Furhh Vincent 1, Charles Davenport Survey, Waskom field, was completed as a dual oil-gas producer, a wet gasser from Pettit and an oil producer from Travis Peak. Yield from Pettit was 7,500,000 cubic feet, with 14 barrels of distillate per million from 5625-38 feet; and from Travis Peak the flow was 22,500,000 cubic feet of gas with accompanying oil production of 14 barrels per million. Gravity of the distillate was 66 and of the oil 43.8. Travis Peak was shot at 5942-6152 feet, total depth 6212 feet.

Oil Industry Participates In California Centennial

The oil industry is participating in a series of Centennial celebrations this summer commemorating the transition of California from a Mexican dependency into one of the United States. An oil industry committee has been appointed composed of Don Gilman, chairman; E. A. Waite and H. H. Roberts, Standard Oil Company of California; W. B. Curtis, General Petroleum Corporation; E. A. Cunningham, Shell Oil Company; Sherman M. McFedries, Jr., Union Oil Company; and George J. Murray, Jr., Tide Water Associated Oil Company.

☆ South Central Texas

Atascosa County Test Has Reklaw Sand Production

New important discovery for east Atascosa County; wildcat in Bexar County abandoned with no shows; Luling area wildcat still testing.

Atascosa County: H. R. Smith and Skinner & Eddy Corporation have completed C. F. Wiegang 1 as the discovery well in the east corner of the county. On latest test the well flowed 133 barrels of 25-gravity oil with no water daily through ⅛-inch choke and with tubing pressure 250 pounds and casing pressure 350 pounds. Production is from the Reklaw sand through perforations at 3771-77 feet, believed to be the first commercial production from the Reklaw sand in South Texas. The well is 3¼ miles northwest of Fashing in the A. S. Donovan Survey A-194, being 467 feet from the southwest line and 2750 feet from the southeast line. Total depth is 3781 feet with 5½-inch casing set on bottom.

Bexar County: John Teagle & E. G. Gill's Randolph Lemelle 1, wildcat 18 miles southeast of San Antonio and 7 miles southeast of Eckert, has been abandoned at 2476 feet. The well had no shows and was drilled 2 miles south of the Cooksey field, nearest production.

Guadalupe County: United North & South Devonian Company's J. F. Webb 1, wildcat 4½ miles southwest of Luling, was still testing after acidizing perforations at 2421-53 feet and 2485-2505 feet. On latest test the well pumped 175 barrels of oil and 175 barrels of salt water in 36 hours. Perforations are in serpentine and chalk and 4-inch liner is set to 2525 feet.

Texas A&I Planning Gas Short Course in August

Improvements in transmission facilities and industrial utilization will be stressed at the Texas College of Arts and Industries short course in gas technology at Kingsville August 27-29.

Sponsored by the Southern Gas Association, the course will include 12 hours in classroom and laboratory instruction, two general assemblies, and field trips to gas fields and cycling plants in the vicinity of the college. In addition, there will be demonstrations of late-type equipment owned by the college.

Dr. Frank H. Dotterweich, head of the A. & I. engineering department, is chairman of the administrative committee. Robert R. Sutyle, managing director of SGA is cooperating.

☆ Southwest Texas

Wildcat North of Sun Field Is Rated Likely Producer

Starr County wildcat shows for production; Kelsey field extended ½ mile south; Hirsch field test abandoned; new wildcat to be drilled on Zapata-Starr County line.

Starr County: Sun Oil Company's Green 1, wildcat 2 miles northeast of the Sun field, showed for production and will

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Condensed Statement of Condition as of the Close of Business June 29, 1946

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Cash and Due from Banks	$38,300,762.32	
United States Government Bonds	57,574,156.38	
Municipal Bonds	458,698.85	
Federal Reserve Bank Stock	240,000.00	$96,573,617.55
Loans and Discounts	23,537,980.12	
Commodity Loans Secured by Warehouse Receipts	2,255,542.93	25,793,523.05
Bank Premises	2,000,000.00	
Furniture and Fixtures	31,413.36	2,031,413.36
Interest on Securities—Earned But Not Collected		164,942.94
Customers Liability on Letters of Credit		3,462,581.02
TOTAL RESOURCES		$128,026,077.92

LIABILITIES

Common Stock	$ 4,000,000.00	
Surplus	4,000,000.00	
Undivided Profits	701,570.27	
Total Capital Account		$ 8,701,570.27
Reserve Accounts		453,607.36
Liability on Letters of Credit		3,462,581.02
Deposits:		
Individual	$81,178,939.26	
Banks	25,534,897.65	
United States	8,694,482.36	115,408,319.27
TOTAL LIABILITIES		$128,026,077.92

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probably become a new discovery for northeastern Starr County. Drilled to total depth of 9895 feet, the test was plugged back inside the 9⅝-inch casing and perforated at 4729-30 feet. Flow on this test was 16.75 barrels of 48.3-gravity oil in 5 hours with gas-oil ratio 1010/1. Operator continued to test after taking initial gauge. This wildcat is 4000 feet from the west line and 4000 feet from the south line of Santa Teresa grant.

J. O. Clark's Gonzales Unit 1-A, ½ mile south extension at the Kelsey field in the northeast corner of the county, gauged 134 barrels of oil daily on 3/16-inch choke. Tubing pressure was 285 pounds, casing pressure 685 pounds and gas-oil ratio 450/1. Drilled to total depth of 4756, production is from open hole with 5½-inch casing set to 4748 feet. This well was drilled on a Sun farmout and is 2450 feet southeast of Sun's Trevine 2-B dry hole.

Webb County: Sun's Hirsch 1-A, 3650 feet east-northeast of the Hirsch 2 gas discovery and 25 miles northeast of Laredo, has been abandoned at 7051 feet. A drill-stem test at 6402-21 feet was dry and a test of a sand at 6947-74 feet recovered salt water.

Zapata County: Progress Petroleum Inc.'s Aveline & Romana Guerra 1 has been located on the Zapata-Starr County line as a new wildcat. Scheduled for 4000 feet, the test is 467 feet from the southeast and southwest lines of the 160-acre lease, Share 5-A, Bernardo Gutierrez Survey, Porcion 14, and is approximately 20 miles north of Roma.

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☆ Lower Texas Coast

Gas Flow Is Registered by San Patricio County Test

San Patricio County wildcat has gas flow; Los Indios west outpost shut in after testing gas; deep wildcat south of Ganado field abandoned; dual completion made in Kelsey, Deep, pool.

San Patricio County: Southern Minerals Corporation's Beasley 1, wildcat 1½ miles southwest of Tynan townsite and near the Bee County line, flowed gas and salt water with no gauge taken to become a new discovery for the area. Flow was from perforations at 4902-12 feet and through 7/64-inch choke with tubing pressure 1620 pounds and casing pressure 1820 pounds. These perforations were then squeezed and operators reperforated in the same sand, apparently in an attempt to shut off salt water. Total depth is 4999 feet with 5½-inch casing set to 4932 feet. This well is a mile northwest of the same company's Katherine Clifton 2, which made a production test of perforations at 4623-28 feet for salt water recovery and was abandoned in May, 1946.

Hidalgo County: Baldridge & King's Goldston 4, west outpost at Los Indios field, had gas flow with 350 pounds working pressure on 2-hour drill-stem test of perforations at 5710-20 feet. Located 4640 feet west of the Goldston 2 well, the Goldston 4 was drilled to total depth of 7207 feet and has 5½-inch casing set to 7010 feet. The well has been shut in with no gauge taken.

Jackson County: Humble Oil & Refining Company's Egg 2-C, deep wildcat south of the Ganado field, has been abandoned at total depth of 12,290 feet where drill pipe was lost. The wildcat was originally scheduled to drill to 13,000 feet.

Brooks County: The Texas Company made dual completion at the McGill Bros. 5, 1320 feet east of the McGill Bros. 2 well in the Kelsey, Deep, field. From perforations at 5914-18 feet the flow was gauged at 188 barrels of 41-gravity oil with no water through 5/32-inch choke and gas-oil ratio 716/1. Flow from perforations at 6034-37 feet was 112 barrels of 41-gravity oil through 3/16-inch choke in 11 hours with gas-oil ratio 620/1. Total depth is 6860 feet with 5½-inch pipe set to 6098 feet.

☆ Upper Texas Coast

Old Ocean Field Scheduled For Extension Test to East

Another extension test for Old Ocean field scheduled; Hempstead wildcat has gas flow; Matagorda Bay wildcat below 4593 feet; offset to Sugar Valley north extension test completed for good flow; fifth producer noted for Hamel; wildcat off Hull southeast flank has salt water on test.

Brazoria County: Magnolia Petroleum Company and J. S. Abercrombie Company will drill another extension on the eastern limits of Old Ocean field production. The test will be the G. A. Gamble et al 1, 12,000-foot project in the James Cummings Survey, and 2000 feet south-southwest of the H. B. Vezey

et al 1, another well that previously extended production in the field. The Old Ocean field is now over 7 miles long and 3 miles wide.

Madison County: West Production Company & Noranda Oil Company's Boring 1, wildcat 7½ miles southwest of Hempstead in Amy Boatright Survey, has opened gas production in the area. With no gauge of flow taken, the well had 2100 pounds flowing pressure on tubing from perforations at 11,815-865 feet. Total depth is 12,536 feet with 5-inch liner set to 12,316 feet. Other tests were to be made.

Matagorda County: The Salt Dome Oil Corporation's State 1, wildcat in Matagorda Bay 5½ miles northeast of Port O'Connor, is drilling below 4593 feet in shale with sand streaks. This test is on a 640-acre lease in Sect. 159 and is scheduled to 6500 feet.

Skelly Oil Company's Dodd 1, southwest offset to Stanolind Oil & Gas Company's Hurlock 1 that extended production 3000 feet north in the Sugar Valley field, has been completed as an oil well. On potential the Dodd 1 flowed 288.75 barrels of 32.9-gravity oil daily through 5/32-inch choke with 1400 pounds flowing pressure and gas-oil ratio of 597/1. Total depth is 9182 feet with 5½-inch pipe set to 9095 feet and perforated for completion at 8972-82 feet.

Colorado County: Skelly Oil Company has completed Berthold 2 as the fifth producer for the Hamel field. Located west of present production, the well flowed on potential 191 barrels of 53.7-gravity oil daily through 7/32-inch choke with 2400 pounds flowing pressure on tubing and gas-oil ratio of 10,554/1. Total depth is 9211 feet with 5½-inch casing set to 9151 feet and perforated for completion at 9059-70 feet.

Liberty County: General Crude Oil Company's Phoenix Development Company 1, wildcat test near the southeast flank of Hull field, showed salt water from perforations at 8039-42 feet during recent tests. An initial test at 8050-58 feet also showed salt water. Both perforations have been squeezed and other tests were to follow. Total depth is 8148 feet with 7-inch pipe set to 8145 feet.

Dual Production Permit

Permission to produce its dually-completed Sadie E. Thomasson 1 well in the Sugar Valley field, Matagorda County, Texas, has been granted The Superior Oil Company by the Texas Railroad Commission following a rehearing. Superior had previously been denied permission to produce the well as a dual.

The well will produce from the Frio section—gas from one zone and oil from another.

☆ South Louisiana

Singer Pool Confirmation Test Completed by Magnolia

Singer pool confirmation test completed; Fresh Water Bayou to get new test; new oiler for Grand Bay field; Calcasieu Lake Dome wildcat abandoned.

Beauregard Parish: Production in the new Singer pool has been confirmed by Magnolia Petroleum Company's Dolby 1, ¼ mile due east of the discovery in 25-5s-11w. On initial test Dolby 1 flowed 130 barrels of oil daily through 7/64-inch choke with 1100 pounds flowing pressure on tubing. Total depth is 8132 feet

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with 5½-inch pipe set to 7724 feet and perforated for completion at 7638-48 feet. Discovery well for the field was Magnolia's Lutcher-Moore Lumber Company 2-C, completed January 25, for 130 barrels of oil daily from perforations at 7638-42 feet. This field is 4 miles east of the Pinegrove field.

Vermilion Parish: Union Oil Company of California will drill another deep test in the Fresh Water Bayou field. The new test will be Louisiana Furs, Inc. 4-C, located 2200 feet north and 1500 feet east of the 1-C discovery well in 33-16s-2e. The Fresh Water Bayou field has 2 gas-condensate wells and a dry hole, drilled to 12,390 feet. The producers have production from different zones. Pay sand in the discovery is at 11,126-134 feet and in the confirmation well production is from a sand at 11,540-555 feet. The new test for the field will be drilled to 14,000 feet, and R. H. Gracey Drilling Company has contract for the operation.

Plaquemines Parish: Gulf Refining Company's State "QQ" 25 has been completed as a new oil well for the Grand Bay field. On initial test the well flowed 348 barrels of oil daily through 11/64-inch choke with 1600 pounds flowing pressure. Total depth is 10,090 feet with 5½-inch pipe set to 10,089 feet and perforated for completion at 994-10,001 feet.

Cameron Parish: Continental Oil Company's State-Calcasieu Lake 4, wildcat on the Calcasieu Lake Dome and 2200 feet due west of the No. 3 dry hole, has been plugged after finding no shows. The test was drilled to total depth of 13,037 feet and electric log showed salt water sands at 8534-80 feet.

☆ North Louisiana

New Wildcats Reported Starting in Three Parishes

Wildcat in Plain Dealing area down to 11,363 feet; Zwolle area deep wildcat abandoned; new wildcats starting in Bossier, Richland and Madison parishes; second deep test in Jackson Parish planned.

Bossier Parish: Barnsdall Oil Company's Carter Burton 1, wildcat, in 26-23-13w, Plain Dealing area, which is seeking the Smackover lime, was drilling at 11,363 feet. H. C. Cummings has applied for permit to drill a wildcat, Burkett Estate 1, C NW NW 29-15n-10w, a 3500-foot test south of Lake Bistineau, north of Loggy Bayou.

Sabine Parish: Union Producing Company's Louisiana Long Leaf Lumber Company 1, wildcat, in 29-8-11w, Zwolle area, was abandoned at 11,265 feet after being tested at every point where there seemed the slightest indication of production. Perforations from 2550-70 feet and 2580-2600 were tested last.

Jackson Parish: W. J. Anson and Associates are scheduled to begin wildcat operations at W. R. Guess 1, 660 feet north and west of the SEc of NW 25-16-3w, which is scheduled for drilling to 10,000 feet. Shell Oil Company's Tremont Lumber Company 3, 21-15-1w, is reported below 10,163 feet.

Caddo Parish: W. C. Feazel et al's S. L. Herold 1, in 21-15-16, scheduled as a Travis Peak test, was drilling at 4650 feet. This test is just across the East Texas border from Carthage gas field. Kerr & McGee Oil Company staked location for a deep test, Harry Johnson 1, 33-19-14, 6 miles northwest of Shreveport. It will go to the Cotton Valley or 8500 feet.

DeSoto Parish: Kerr & McGee Oil Company's Nabors 1, 28-12-14w, was at total depth of 6684 feet. This well reportedly had sufficient gas sand at 6176 feet to make a commercial well. J. P. Owens et al's G. B. Dickson 2, 27-14-13w, was abandoned at 2783 feet.

Claiborne Parish: Placid Oil Company and Union Producing Company's Owens-Odom U-1, wildcat in 21-23-6w, Colquitt area, tested a 3-foot zone from 4476-79 feet, total depth 5715 feet, and recovered 99.5 percent wash water and 5 percent oil.

Richland Parish: Roy L. Fisher Company's wildcat, Cooper 1, 21-17-7e, was down 3208 feet; R. T. Sellars Company-J. G. Joseph Company's Clark 2, also a wildcat, 2-16-7e, was drilling below 3400 feet. Wildcat locations were made for: Pan American Producing Company's George Franklin 1, 2028 feet south, and 660 feet west of NEc 3-17-8e, to go to 4000 feet; and Pres Cochran's Dr. T. M. Sayre 1, 330 feet north and west of SEc SW 34-17-7e.

Madison Parish: Arrow Drilling Company's E. J. Waller 1 is a new wildcat, 200 feet south and 300 feet east on a peninsula extending into lake water on north, west and south in 16-17-11e. It will be a Paluxy sand test.

Fire Destroys Plants

A fire of undetermined origin destroyed the asphalt roofing and asphalt specialty plants at the Anderson-Prichard Oil Corporation's refinery at Cyril, Okla., July 9. Estimated loss was more than $100,000.

☆ Arkansas

Wesson Field Reports Oil and Gas Producer

Wesson field gets new producer; three wildcats drilling.

Ouachita County: Stephens Refining Company's Ella Wesson 1, NE NE NW, 23-15-19, was completed flowing 11½ million cubic feet of gas on open flow from the Nacatosh sand, with bottom-hole pressure 957 pounds. A blank liner was bottomed at 1527 feet. The well was shut in awaiting connection to pipe line.

McAlester Fuel Oil Company's Wesson Heirs B-1, NE SW SW 24-15-19, perforated casing at 3082-94 feet with 24 shots, and flowed into tanks, but gauge has not been announced. Same operator's R. B. Allen B-1, SW NW NE 4-15-19, tested salt water after perforation at several levels, the deepest being 4436-42 feet.

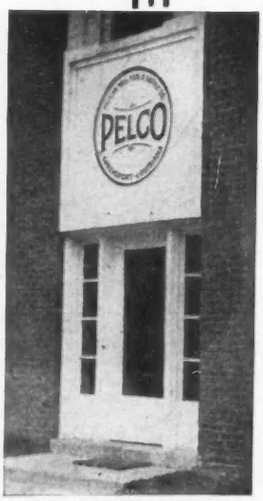
Three miles north of Stephens, Lion Chemical Company's Wesson Bros. 1, wildcat, in SW SE NW 4-15-19, is drilling at 2066 feet. Operations were delayed several days by breakdown in water pump.

Union County: Guy Mabee et al's Union Saw Mill 1, wildcat, SW NW 31-18-11w, has 9⅝-inch pipe set at 865 feet. H. E. Wasson's Union Saw Mill A-2, wildcat, SW NE 8-18-12w, was continuing tests after a yield of 2 barrels daily from 2316 feet.

Miller County: Carter Oil Company's

Goosepimples

The Detroiter points out that Congress is piddling, having abdicated in favor of bureaucratic left-overs from the New Deal. And it points out the equally obvious fact that this situation should leave all of us cold with fright "far beyond the goosepimple stage." Iron Age, always conservative, reminds us that we are sliding into a pit with no bottom—a hopeless political, social and economic hell. Both publications plead with us to do something about it NOW; to wake up and demand Government for the people "—not for racketeers, reformers and pinks." Holding precariously as we are to free enterprise after peddling supplies and equipment in comparative security for 38 years, we cheerfully dedicate this space to the suggestion that letters to your Congressmen are just now vitally important. Tomorrow may be too late.



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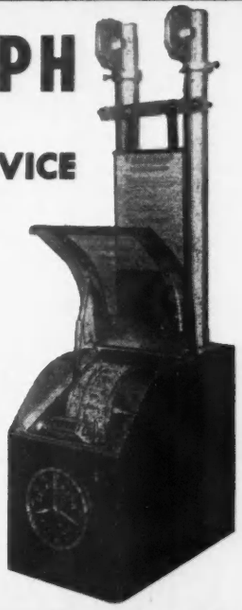

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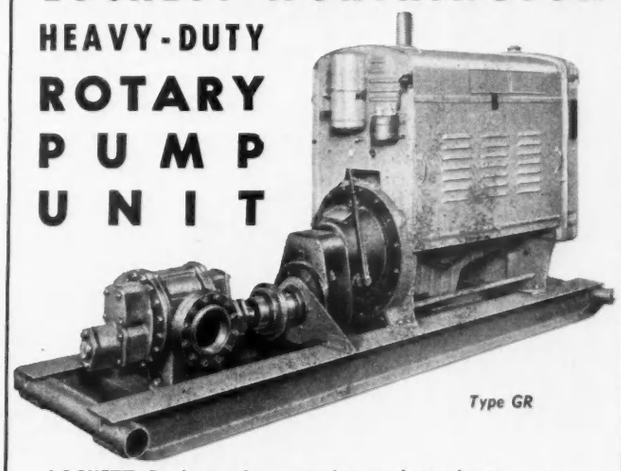

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Irene Offenhauser 1, NW NW 5-17-26, Fouke field, was reported shut down, after failure to find commercial production in several tests, total depth 3595 feet. Test of the well may be repeated later.

Asphalt Plant

United Asphalt Corporation, a new company, will build an asphalt plant at Heidelberg, Miss., near the Heidelberg oil field. The plant which will have a daily capacity of 2000 barrels will be constructed as soon as a charter is obtained.

Two Gary, Ind., men head the company, Lawrence G. Bennett as president and C. M. Page, executive vice president. B. C. Burns of Heidelberg is secretary-treasurer.

☆ Mississippi

Adams County Well Deepest Producer in Mississippi

Deep tests in Cranfield completed as a gasser; field and wildcat activity in state quiet during the week.

Adams County: The California Company's Ella G. Lees 9, 45-7n-1w in the Cranfield field has been completed as a gasser for the deepest producing well in Mississippi. Whereas the regular producing sections for the field are the Wilcox zone at approximately 5800 feet and the lower Tuscaloosa at about 10,000 feet the well was driven through to the Paluxy section and perforated at 11,772-794 feet with 48 shots. On test the well flowed at the rate of 3 million cubic feet of gas per day through 3/16-inch tubing choke. California's A. M. Ratcliffe 9, 71-7n-1w also completed in Cranfield, on initial test flowed 293 barrels per day of 38.4-gravity oil. In the newly discovered LaGrange field Roeser & Pendleton-Sohio's W. J. Maier 1, NWc 34-6n-2w, offset of the discovery well is running core tests in the Wilcox topped at 4339 feet. Slight shows of gas were obtained in the upper sections. Tests are continuing below 5875 feet. Ohio Oil Company has rigging up for its Geo. W. Armstrong SEc 12-5n-3w, 10,000-foot test.

Claiborne County: Sun Oil Company's W. R. Hammett 3, 15-11n-1e, in the small Bruinsburg field is readying up for a drill-stem test of the Wilcox horizon topped at 2631 feet. Tests of the Sparta lime at 1526-90 feet had shows of gas.

Sharkey County: Maner Graham's Carpenter & Graft 1, SE NE SE 25-13n-7w, shallow prospect has run surface casing to 500 feet and is drilling at 734 feet. In the Cary field J. H. Gwin's Rice 1, SW SW SW 14-11n-7w, is fishing while bottomed at 3208 feet.

Warren County: McAlester Fuel Company's Anderson-Tully Lumber Company 1, NE NE 35-18n-1e, is drilling below 4590 feet. Gas Rock was topped at 4590 feet.

Lincoln County: The California Company's Mary Parnell-McDaniel 1, NEc SE 17-6n-8e, Massive sand prospect is drilling below 8970 feet. Roeser & Pendleton's Columbus Lumber Company 1, NE NW 20-6n-6e, also heading for the deeper horizons is drilling below 8325 feet. In the Brookhaven field The California Company has three tests and The Sun Oil Company one, all below 8000 feet in their drive for the productive lower Tuscaloosa zone.

Jeff Davis County: Gulf Refining Company's Maggie L. Thompson 1, SEc NE SW 14-9n-19w, in the Gwinville field has set production string of casing to 8259 feet in the Tuscaloosa horizon.

Jefferson County: Humble Oil & Refining Company's Mrs. A. M. Stewart B-2, 27-9n-1w, in the Fayette field is drilling below 8567 feet.

Clarke County: Kirby Petroleum Company's Long Bell Petroleum Company F-3, SE SE NE 30-1n-18e, in the first of three tests in the Langsdale field is preparing to run core tests after reaching a total depth of 3356 feet in chalk. J. H. White's M. Eddins 1, NW NW 19-2n-14e, shallow wildcat is getting ready to spud.

Yazoo County: Union Producing Company's Jennie Stevens 23, NEc 12-10n-3w, in the Tinsley field will make production tests of the Stevens sand at 5423-35 feet.

Florida

Rogers Lacy et al's Walton Land & Lumber Company 1, SW SW 14-1n-18w, Walton County, 6500-foot test, will probably be abandoned. Total depth is 6508 feet. Hole has been extensively cored throughout its length; cores taken between 4792-4832 feet recovered sand and shale with salt water.

Monroe County: Gulf Refining Company's State 1, SWc 2-67s-29e, is drilling below 9634 feet in lime. No shows have been noted. Gulf is also building roads for an offset of State 1, which will lie on Lease 374, 15-67s-27e.

Osceola County: Humble Oil & Refining Company's N. Ray Carroll 1, SE

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SE 10-27s-34e, is drilling below 7630 feet with no shows reported.

Volusia County: Sun Oil Company's Powell Land Company, SWc 11-17s-31e, wildcat, is waiting on cement after recementing casing to total depth of 833 feet.

Dixie County: Stanolind Oil & Gas Company and Sun's Perpetual Forest 1, NW NW 5-11s-11e, is drilling below 6400 feet after running electrical log to 6275 feet. No shows have been reported.

Dade County: Gulf's State Model Land Co. 1-C, in Twp. 60s-35e, southwest of Miami, was running casing at 510 feet. The hole is slated for the 10,000-foot zone.

Alabama

Glen D. Rose Oil & Gas Company's First National Bank of Birmingham 2, NW SE 30-12s-7w, Walker County, wildcat, is drilling below 2703 feet in lime. No shows have been reported.

Pickens County: C. H. Murphy, Jr.'s R. E. Eaton 1, NE SE 34-19s-16w, has set surface casing to 1097 feet for shallow test. Drilling is now below 1310 feet.

☆ Rocky Mountain Area

Shinarump Formation in Rangely Gives Oil Show

Oil show in Shinarump formation at Rangely field, Colorado, which also gets first dry hole; Wyoming wildcat getting drill-stem test in Embar.

Colorado

Continental Oil Company's northwest edge test to the Rangely field at Rooth 2, C SW SW 15-2n-103w, Rio Blanco County, has caused considerable interest by discovery of oil in the Shinarump formation, topped at approximately 6075 feet. It flowed 130 barrels of 38-gravity oil the first hour; during the first 6 hours produced an average of 73 barrels of oil per hour through 44/64-inch tubing choke. The tubing was then plugged by sand. Continental will continue testing the well which has a total depth of 6121 feet. Shinarump is not productive in any of the northwestern Colorado fields.

Cobb et al's Government-Bockhold D-1, SE SE SE 4-1n-102w, is the first Rangely dry hole. The well topped the Weber at 6405 feet and was drilled to 6870 feet. Cores showed some staining, but on all tests the well made salt water. Since discovery of the field in 1933 there have been 80 wells completed in the Weber sand and daily production is approximately 25,000 barrels.

Montana

The wildcat test being drilled at Maxwell Buttes by The Pure Oil Company is running an electric test at 6722 feet, and may be in the Tensleep sand. There have been no reports of shows of oil or gas, and water has shown in several drill-stem tests. This is an important North Powder River basin well southwest of the large Baker-Glendive anticline of Eastern Montana in Custer County.

Wyoming

Wasatch et al's East Bailey Dome wildcat at Unit 1, SWc 13-26n-89w, Carbon County, may prove a failure. The well has now cleaned out to 6930 feet and swabbed dry in 24 hours, showing some water, with plugged back depth at 6940 feet. This well was rated as a discovery more than a month ago when it flowed 100 barrels in an hour after being shot with 500 quarts between 6745-6920 feet, in the Tensleep sand.

Fremont County: In the Big Sand Draw field Sinclair Wyoming Oil Company's Unit 3, SW SE SE 10-32n-90w, with total depth at 6645 feet, blew out in the Embar formation. Embar was topped at approximately 6525 feet, and a drill-stem test was being made of the section when the well blew out with a flow estimated at 25 million cubic feet of gas and a spray of oil. The well was killed the following day, and drilling will be resumed to the Tensleep sand. This will be the third well to the Tensleep oil zone in this field, which has produced gas from shallow sands for a number of years.

☆ Illinois Basin

Illinois' West Clay City Pool Area Due for Strike

Discovery looms in Clay County, Illinois; Keenville pool, Wayne County, gets extension; discovery ahead for Posey County, Indiana.

Illinois

T. B. Dirickson's Cassidy 1, SE SW SE 5-2n-7e, Clay County, is a prospective discovery 2 miles west of the West Clay City pool. The operator has set pipe for test of McClosky lime at 3070-80 feet after a drill-stem test showed 100 feet of clean oil.

Wayne County: E. L. Markham et al's Keeler 1, NE SE SW 21-1s-5e, is

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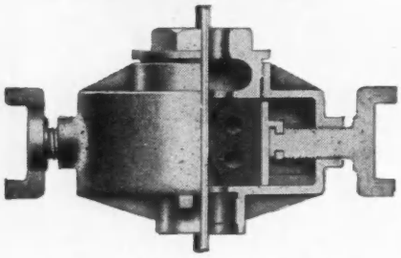

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White County: The Pure Oil Company's Wylie 1, NW NW NE 19-5s-9e, showed 1800 feet of oil during a 1-hour drill-stem test of Cypress sand at 2845-50 feet and 2860-70 feet, to give the Trumbull pool an excellent ¼ mile south extension.

Coles County: Kingwood Oil Company's Burtschi 1, NE NE SE 34-13n-7e, originally hailed as a possible 2-mile northern extension for the Mattoon pool, has been abandoned as dry at 2067 feet after topping St. Louis lime at 2009 feet. Non-commercial shows of oil were found in Cypress sand during a drill-stem test.

Bond County: Luttrell and Doran's Root 1, SE SE NE 16-6n-4w, is still testing Trenton pay in attempts to open a new pool. The well has caused considerable lease play in the area.

Washington County: Although Ben J. Taylor's Bauza 1, SW SE SW 6-3s-1w, was abandoned as dry at 1476 feet, the same operator is drilling below 1100 feet at Bauza 2, NW SE NW 6-3s-1e, 3 locations south of the other well. Operators said it was topping structures 20 feet higher than anticipated.

Indiana

Paul Rossi's Rippey 1, SE SE NW 30-6s-13w, Posey County, a mile south of the Farmersville pool, is testing Pennsylvania sand at 1432-44 feet. During a 1-hour drill stem test, the well yielded 320 feet of oil.

☆ Michigan

Two Wildcats Carry Gas In Shallow Formations

Taggart Brothers Company's Hill 5, N½ SE SE 33-14n-6w, Broomfield Township, 4 miles south of the Broomfield-Sherman field, Isabella County, carried estimated 100,000 feet of gas in the Stray sand at 1391-94 feet and 7-inch casing was set at 1419 feet for deepening to 3800-foot Dundee section. Test is in a block held by Carter Oil Company and The Pure Oil Company with Taggart having farmout on shallow Stray sand gas rights.

Mecosta County: Maguire, Russell and Fletcher's Smith 1, NE NW NW 22-14n-8w, four miles southwest of the Wheatland area, logged 450,000 feet gas on drill stem test in Michigan Stray sand and was cased at 1665 feet for standardizing and deepening with cable tools to 3700 feet.

Standard's Wharf Project

Plans to modernize Standard Oil Company of California's Richmond, Calif., wharfing facilities estimated to cost $4,370,000 were announced last week. Projected are a truck causeway, enlargement of the pier to increase docking space from the present three deepwater berths to five and to provide space for six barges, and reconstruction of the repair dock, office building, machine shop and warehouse. The loading section will be lengthened from its present 1516 feet to 2466 feet.

A mile-long, two-lane causeway of reinforced concrete with asphaltic surface will connect the wharf to the shore.

☆ California

Los Angeles Airport Test Gives Promise of Producer

Oil discovery looms near Los Angeles municipal airport; second attempt to develop production in Gardena area ends in failure; General Petroleum to drill another wildcat near Buena Park in Orange County.

Los Angeles County: A formation test gave good promise in Six Companies' Fee 1 in 2-3s-15w, near the Los Angeles airport. A test of the interval from 6862 feet to bottom (Schist at 6939 feet) with tester open 62 minutes, got a good blow with a recovery of 3000 feet of muddy, 12-gravity oil, with 100 feet of oil mud on bottom. El Segundo field, 1½ miles southeast, produces 15 to 28-gravity oil from the Schist and overlying conglomerate.

Site of the well is on a 900-acre piece owned in fee by Richfield Oil Company, Shell Oil Company of California, Standard Oil Company of California, The Texas Company, Tide Water Associated Oil Company, and Union Oil Company of California.

Ohio Oil Company has abandoned its Gardena Community 4-1 in 23-3s-14w. The well swabbed salt water from a plugged depth of 10,040 feet with 7-inch casing cemented at 9100 feet. Total depth was 10,288 feet. Last year Ohio abandoned at 10,594 feet Gardena Community 1 in Sect. 24. Considerable oil sand was logged, but due to mechanical difficulties and water trouble, commercial production was not obtained. British-American Oil Producing Company and The Texas Company's Bodger 1, a joint test in Sect. 22 to the west, is drilling below 7290 feet.

Deepest test in the East Los Angeles field, Chanslor-Canfield Midway Oil Company's Bandini 1 in 21-2s-12w is drilling below 12,000 feet, more than 3000 feet below field production.

The Texas Company abandoned at 10,188 feet its Ciocca 1 in 5-2s-11w, off the east end of the Montebello field. To the southeast, just north of the West Coyote field, Standard of California is drilling below 11,000 feet in Stern Community 1 in 7-3s-10w.

Orange County: General Petroleum Corporation has started another wildcat in the Buena Park area where last year it drilled to 12,600 feet and obtained production, though not in commercial quantities. Operator has spudded La Mirada Community 46-1 in 16-3s-11w, a deep test.

A. W. Lyddon obtained a substantial amount of 28-gravity oil on a production test in Anaheim Sugar 7-1 in 7-6s-10w in the area between the Huntington Beach and West Newport fields.

Kern County: Tide Water Associated Oil Company has spudded M. & S. 113 in 29-28s-28e, a deep test of the Kern River field.

In the South Belridge field, Belridge Oil Company's 62-W-33 is drilling in shale below 12,100 feet. This is the deepest wildcat in the San Joaquin Valley, having gone ahead of Kings County Oil Company's Von Glahn 1 in the Tulare Lake area of Kings County which is waiting on casing with bottom at 12,014 feet.

Ventura County: Continental Oil Company completed a good well in the San Miguelito field, Grubb 44-2 in 24-3n-24w

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In the South Mountain area, Freeman Fairfield has eliminated most of the water in West Mountain 1 in 23-3n-21w and the well is currently producing 150 barrels on the pump, cutting 10 percent.

☆ Ohio

Hopeful Pool Extension Comes In As a Gas Well

Second Oriskany test in Columbiana County showing gas; Hopewell pool extension comes in a gas well; latest Portage County test is disappointing.

Columbiana County: O. Eberly et al's R. E. Green 1, one mile northeast of Ohio Oil Company's wildcat discovery on G. L. Powell near the center of Madison Township, reached the Oriskany sand at 4409 feet and lost a bit at 4412 feet. The well is showing 2½ million cubic feet of gas and more is expected when drilled through the sand.

Perry County: In a half mile extension both east and west of two oil pools in south Hopewell Township, H. C. Hofacker's Wm. S. Love 1, came in at ½ million cubic feet of gas. Clinton sand in the test was logged from 2928-70 feet.

Portage County: Roy Weed's Howard Bissell 1, a south offset to his Cleveland Trust Company 1, had only a small gas pay in the red Clinton at 3974-79 feet and an oil show at 4007 feet. After a 40-quart shot the well was shut in at 40,000 cubic feet. This was Weed's fourth test in his wildcat play near the town of Aurora.

Meigs County: H. B. Walker's H. R. Cook 4, in the southern part of the Hemlock Grove pool and 1000 feet southeast of the Cook 2, flowed 35 barrels in 24 hours after shot. Production was from the Berea sand at 1632-50 feet.

☆ Canada

Three Independents to Try For Viking Sand Extension

Three independents have joined to seek an extension in West Central Saskatchewan of the Viking sand gas reserve of the Central Alberta Plains, and to seek oil in the Lower Cretaceous contact sand, source of production in the recent Imperial-Provost No. 1 discovery. Initial well, Bata-Provost 1, was spudded in lsd 4 5-35-28w3rd, just over a mile east of the Alberta-Saskatchewan border, 22 miles southeast of the Imperial-Provost discovery, and over 80 miles southeast of the ¼ million-acre Viking-Kinsella gas reserve.

Dr. J. O. G. Sanderson, geologist who staked the new Saskatchewan wildcat, believes the site comparable structurally to the Imperial-Provost, which found gas (1500 MCF daily on drill-stem test) in the Viking sand at 2373 feet and 21-22-gravity crude in a sand from 2534-49 feet, at the Lower Cretaceous contact. It is flowing 26 to 30 barrels of oil daily against 133 pounds on tubing. The Viking sand is currently cased off.

Backers of the new venture are Bata Petroleums Ltd., Vera Oilfields Ltd (active operators in Saskatchewan's Vera-Unity gas field) and Superior Oils Ltd., a new Alberta concern financed by a number of independents. The backers share a checkerboarded half of a 250,000-acre crown reservation along the Saskatchewan side of the interprovincial boundary.

Bata Petroleums Ltd., discoverer of the Vera-Unity field, Saskatchewan's first important gas field, has commenced initial geophysical work in the area extending out from that field. Brown Geophysical Company of Houston began a gravity meter survey of a 185,000-acre block for Bata on July 2 and will complete the project in about 2 months.

Imperial Oil Ltd., through its subsidiary Northwest Company, has taken up a crown reservation on 265,800 acres in the Pigeon Lake area, on the Central Western Alberta Plains, southwest of Edmonton. The block ties on to the south of the large Anglo Canadian-Home Oil-C. & E. Corporation's Wabamum Lake reserve, and onto the west and north of the large McColl-Frontenac (The Texas Company) Wetaskawin reserve.

Shell Oil Company of Canada 16-14-J, key west flank test on the Jumping Pound anticline in the South Alberta foothills, has topped its Madison limestone objective at 10,335 feet, 6288 feet sub-sea, but the answer on oil prospects has been delayed by collapse and parting of drill pipe 250 feet off bottom (10,365 feet). Crew was fishing. The well is ⅜ mile southwest of Shell's 1944 wet gas discovery, and the same distance northeast of a Shell failure (water in the Madison).

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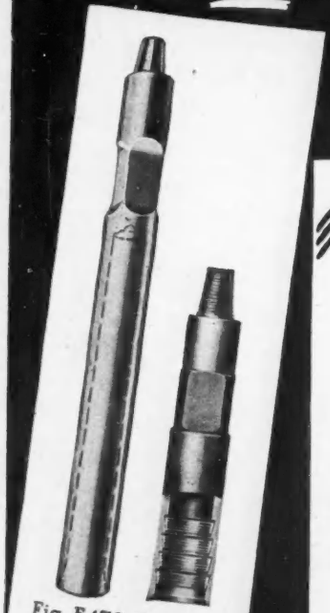

Fig. F476 Fig. F481

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(Fig. F 476)
and MULTI-SLIP COLLAR SOCKET
(Fig. F 481)

These tools are intended for fishing where the clearance is close between the fish and the well bore. They frequently save a pin milling job but, obviously, they have limited strength. However, when made to the Spang Higher Standard of tough steel with thorough heat-treatment, they will do more than one might expect.

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CALIFORNIA WILDCATS

Kern County—Failures: Beverly Trading and Exploration Co.'s F.O.B. 1, 31-29s-21e, Temblor area, abnd 2370.

Wilshire Oil Co.'s Lehman 1, 18-28s-20e, Belridge area, abnd 1126.

Tulare County—Failure: Union Oil Co.'s Griffin 45-8, 8-22s-26e, Tipton area, abnd 3746.

COLORADO WILDCAT

Jackson County—Lake Creek Failure: Wm. Farrelly's Hill 1, nw ne sw 21-11n-81w, abnd in Pierre 1462.

COLORADO OUTPOST

Rio Blanco County—Rangely Failure: Newton et al Govt. 1-D, c se se 4-1n-102w, Weber 6405, abnd 6870.

ILLINOIS WILDCATS

Cumberland County—Oil Discovery: Central Pipe Line Co.'s Myers 1, 36-9n-9e, pump 15 bbls fr Rosi. 2648-54, td 2776.

Hamilton County—Failure: Claude Neon Lights' Seng 1, nw sw nw 27-4s-5e, abnd 3470.

Hamilton County—Oil Discovery: Ryford Oil Co.'s Johnson A-2, ne sw ne 10-5s-7e, pump 128 bbls fr A.V. 3393-3401, td 3550.

Madison County—Failure: E. P. Jarvis' Hitz 1, nw ne se 8-5n-5w, abnd 2797.

Marion County—Failure: Reward Oil Co.'s Krug 1, sw ne sw 7-4n-3e, abnd 1915.

Shelby County—Failures: Texas Co.'s Mietzner 1, sw sw ne 5-9n-5e, abnd 2214.

Sohio's Strohl 1, nw sw ne 17-10n-4e, abnd 2009½.

Wayne County—Failure: Robinson & Puckett's Hale 1, ne ne ne 19-2n-7e, abnd 3201.

White County — Failure: C. A. Lynch's Golden 1, ne se se 21-5s-14w, abnd 2742.

INDIANA WILDCATS

Gibson County—Failure: British American et al's Robb 1, nw se sw 16-3s-13w, abnd 2877.

Martin County—Failure: J. E. Bauer's Lentz 1, ne se ne 36-3n-5w, abnd 520.

Pike County—Gas Discovery: Hoosier Gas Corp.'s Steen 1, 19-1n-6w, flow 1 mln gas fr Paint Creek 868-70, td 870.

Posey County—Failure: Fleming & Swann's Hortman 1, nw nw se 27-6s-12w, abnd 2760.

KANSAS WILDCATS

Cowley County—Failure: Earl Wakefield's Oglebee 1, sw ne ne 7-32s-4e, abnd 3348.

Ellsworth County — Failure: Phil-Han's Rathburn 1, sw sw nw 16-17s-8w, abnd 3445.

Ford County—Failure: E. M. Swearer et al's Brown 1, (owdd) sw sw sw 4-26s-23w, otd 2915, abnd 5755.

Graham County—Failure: Potash Co. of America's Logue 1, sw sw nw 17-6s-24w, abnd 4255.

Morris County—Failure: F. H. Holl et al's Clark 1, nw sw ne 7-17s-5e, abnd 2535.

Pratt County—Oil Discovery: Bridgeport Oil's Stoops A-1, (owdd) se se sw 7-29s-12w, otd 4731, flow 793 bbls oil, 2% wtr fr Arb. 4454-63, td 4463½.

KENTUCKY WILDCATS

Crittenden County—Failure: J. E. Kennard et al's Etheridge 1, 15-J-19, abnd 1120.

Daviess County—Oil Discovery: Sylvester Yunkers' Mayfield 1, 5-N-32, pump 35 bbls fr T.S. 627-34, td 643.

Henderson County—Failure: Ryan Oil Co.'s Crafton 1, 9-O-24, abnd 2484.

NORTH LOUISIANA WILDCATS

Caldwell Parish—Failure: Atlantic's La. Central Lbr. Co. 1-E, 32-13n-4e, Wilcox 1544, Midway 3762, Gulf 4434, base Chalk 4814, base Austin 5847, Tuscaloosa 5988, abnd 7197.

Madison Parish—Failure: Rogers Lacy's Bryant 1, c sw sw 28-17n-10e, Clayton 3526, Tuscaloosa 3545, L. Cret. 4053, abnd 4208.

Richland Parish—Failure: R. T. Sellars-J. G. Joseph's Clark 1, c se ne sw 2-16n-7e, jkd and abnd 2690.

SOUTH LOUISIANA WILDCATS

Acadia Parish—Failure: Harry Fotiades' J. R. Watson 1, 330 n 660 e of sec sw¼ nw¼ 24-7s-1e, 1 mi n of S. Bayou Mallet prod, Epondies 7155, Large Discorbis 7183, Hetrogen 7335, Marginulina 7415, abnd 10,004 in Chickaswhay.

Jeff Davis Parish—Failure: Sohio's W. L. Trimble 1-A, c se¼ nw¼ sect 2-8s-4w, China area, abnd 9598.

LaFourche Parish—Failure: Union of Calif.'s City of New Orleans 1, beg sec 24-2 s-22e, go n 2520 alg el sect 24 th 330 e at ra to lcn in 24-23s-22e, abnd 9174.

Cameron Parish — Failure: Continental's State-Calcasieu Lake 4, 2200 w of dry hole 3, 20,083 w 3248-9 n of nec 1-14s-9w, in Calcasieu Lake, abnd 13,037.

MICHIGAN WILCATS

Allegan County—Failures: C. W. Kendall's Leach 1, se ne nw 35-1n-16w, abnd 1151.

C. W. Kendall's Nyberg 1, sw se sw 28-1n-11w, abnd 1465.

Del Fortney's Pipe 1, se ne sw 25-2n-12w, abnd 1615.

Bay County—Failure: Chapman Oil Co.'s Sovey 1, se se ne 24-15n-3e, abnd 2121.

Barry County—Failure: Superior Oil Co.'s Kotraba 1, sw nw nw 30-3n-10w, abnd 2012.

Arenac County — Failure: Sohio-Talbot's Brennon 1, se ne se 14-18n-4e, Dundee 2674, abnd 2760.

Kent County—Oil Discovery: Oil Producers, Inc.'s Brewer 1, ne se se 8-5n-11w, Traverse li 1859, est 3 bbls after acid, td 1910.

Montcalm County—Failure: McClanahan Oil Co.'s Roth 1, se ne sw 24-11n-6w, Dundee 3378, abnd 3391.

Montcalm County—Day Oil Discovery: McClure Drlg. Co.'s Wicks 1, sw ne nw 36-11n-6w, Dundee 3321, pay 3337-38, est 50 bbls after acid, td 3345.

Ogemaw County—Failure: Cities Service's Hickey 1, se se se 8-21n-1e, Dundee 3455, abnd 3642.

Van Buren County—W. Columbia Oil Discovery: W. D. Gannett's Chamberlain 1, ne nw sw 17-1s-15w, Traverse li 1127, est 65 bbls, td 1130.

Van Buren County—Failures: Neil Wagenaar's Piper 1, ne se ne 8-1s-16w, abnd 1065.

S. L. Godfrey's Everhardt 1, ne se nw 32-1s-16w, abnd 1020.

MICHIGAN OUTPOST

Ogemaw County—Rose City Extension: United Drillers & Producers' Anderson 1, nw nw ne 11-23n-2e, Richfield, est 3 bbls, td 5160.

MISSISSIPPI NEW PAY TEST

Adams County-Cranfield Paluxy Gas Discovery: California's Ella G. Lees 9, 45-7n-1w, flow 10 mln gas, ⅝-in, fr 48 perfs 11-772-794, td 12,718.

MONTANA WILDCATS

Big Horn County—Nine Mile Failure: MacKinnie Oil & Drlg.'s Ottun 5, c nw nw 3-1s-34e, wtr Sundance, abnd 2980.

Petroleum County—Flatwillow Failure: Geo. Brundage's Teague 1, c sw nw 35-14n-25e, Ellis 1378, abnd 1503.

MONTANA OUTPOSTS

Toole County—Kevin-Sunburst Oil Extension: Kittendorf's Bashor 1, se nw se 9-35n-1w, Ellis-Madison 1784, 1000 gals acid, pump 35 bbls, trace wtr, td 1787.

OHIO WILDCAT

Knox County—Failure: F. Colville's Margaret Hogle 1, nw ne 25, Jackson Township, Clinton 2680-2710, 2723-27, td 2760.

OKLAHOMA WILDCATS

Cotton County—Oil Discovery: R. B. Farris' Wook-kah-nah 1, sw nw sw 1-4s-11w, pump 125 bbls 35.5-gr, pay 1301-28.

Cotton County—Failure: R. B. Farris' Ah-too-was-su-ah-he, se sw ne 2-4s-11w, abnd 3330.

Greer County—Failure: Woodruff & Everette's Hohn 1, ne sw ne 7-6n-21w, abnd 1309.

WEST TEXAS WILDCATS

Andrews County—Failure: Skelly's University 1-Z, c nw ne sect 10, blk 11, elev 3331, anhy 1550, Yates 2830, brown lime 3840, Grayburg 4030, San Andres 4280, San Angelo 5440, Tubb 6280, Wolfcamp 7650, Silurian 8380, Simpson 8805, McKee 9139, abnd 9212.

Garza County—Failure: Plymouth Oil Co.'s Slaughter 1, ne ne nw T&NO Ry 32, blk 2, elev 2490, San Andres 2460, Clear Fork 2815, abnd 4506.

Pecos County—Junked: G. F. Aldrich's State Bank (El Paso) 2, c ne nw T & St. L. Ry. Co. 25, blk 140, elev 2486, jkd and abnd 1101 ft, skid 15 ft n.

Sterling County—Failure: Humble's Harris 1, c se nw H&TC Ry. 114, blk 6, elev 2363, Ellenburger 6955, abnd 8402.

WEST CENTRAL TEXAS WILDCAT

Jones County—Failure: H. K. Riddle et al's Barnhouse 1, 330 ewl 2000 snl sbdn 2, Goliad CSL sur 358, elev 1785, Flippen 2857, abnd 2878.

NORTH TEXAS WILDCATS

Cooke County—Failures: M. L. Barrett et al's Bergman 1, 330 out swc blk 20, John Barnett sur, abnd 2023.

J. F. Hood and B. O. M. Oil Co.'s Lutmer 1, 2111 fr swl 1500 fr sel 200-ac tr and I. Saunders sur, Ellenburger 2298, abnd 2367.

R. M. Iglehart et al's Endress 1, 1110 nsl 160 ewl 140½-ac tr, J. C. Richards sur, abnd 1761.

Norwood et al's Moss 1, 400 w 650 n of nec S. R. Knight sur, abnd 1290.

Trout-Hansen Prod. Co.'s Pace 1, 330 snl 1000 ewl M. P. Reed sur, elev 716, abnd 2510.

Standard of Ohio-Sohio's Breeding 1, 1088 snl 903 ewl J. Hawkins sur, elev 749, Ellenburger 3057, abnd 3091.

Jack County—Failure: Continental's Durham-Kempner 1, 330 n 330 w of nwc T. H. Cherryhomes sur, but in Chas. J. O'Conner sur, elev 948, Bend 5042, Marble Falls 5348, Barnett 6345, Ellenburger 6532, abnd 6660.

Throckmorton County — Failure: Eastland Oil Co.'s Mathews 1, ne ne nw E. T. Ry. 228, elev 1577, abnd 1589.

Wichita County—Failure: J. D. Thweatt et al's George 1, 1748 snl 1700 ewl GC&SF Ry. 3, abnd 1980.

Wilbarger County—Failure: S. D. Johnson et al's Porter-Ayres-Gulf 1, 330 out nwc w½ H&TC Ry. 58, blk 15, elev 1181, lime 4374 and 4750, abnd 5313.

TEXAS PANHANDLE WILDCAT

Collingsworth County—Failure: Bridgeport Oil Co.'s Hughes 1, se se se H&GN Ry. 78, blk 11, elev 2052, Permian red beds 115, Cimarron lime 1200, Wichita-Albany dolomite 2292, granite wash 2706, abnd 4150½.

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EAST TEXAS WILDCAT

Anderson County—Failure: Tex Harvey Oil Co.'s Hall 1, 467 out nec tr and S. Rocha sur, elev 337, Pecan chalk 3965-4100, Austin 5080-5285, Woodbine 5520, Buda 6504, abnd 6524.

SOUTH CENTRAL TEXAS WILDCAT

Bexar County—Failure: Ernest J. Biskamp's State of Tex. 2, 2850 fr el 330 fr sl 1085 fr swl 280-ac lse, Wm. Small sur 26, abnd 1255.

SOUTHWEST TEXAS WILDCATS

Duval County—Failures: Bridwell Oil Co.-American Republican's A.&E. Flores 1, 330 fr sw&nwl 96-ac lse, J. Poitevent sur 529, sh 4, abnd 4210.

H. H. Howell's Lizzie Singer 2, 1650 fr nl 1650 fr el 785-ac lse, 1650 fr el G. Cumberland sur 4, e flk Palangana Dome, abnd 5655.

Webb County—Failure: O. W. Killam's Servando Benavides 1, 467 fr wl 330 fr nl AB&M sur 685 and of 320-ac lse, s flk Carolina-Texas fld, abnd 3825.

SOUTHWEST TEXAS NEW PAY TEST

Starr County—Cortez Oil Discovery: W. H. Holland's Roos-Bennett 2, 330 fr sl 1068 fr el 120-ac lse, sh 100, Porc 93, 933 sw disc well pay 2910, flow 66 bbls 22.8-gr, ¼-in, gor 4000/1, tp 550, cp 800 lbs, td 3006.

LOWER TEXAS COAST WILDCATS

Brooks County—Failure: Grey & Wolfe-La Gloria Corp.'s Chas. S. Lips 1, 467 fr el 9000 fr nl El Perdido Gr, 41.808-ac lse, e side SPRR & King Rch acreage, abnd 7015.

Karnes County—Failure: Gulfshore Oil Co. et al's Alvin Wagener 1, 467 fr n&el 102-ac lse, Wm. Hunter sur, abnd 6507.

Willacy County—Failure: Humble's Sauz Rch-Jardin 1, start sec sh 469 (San Adres pstr) go n alg wl 10,000-ac lse for 16,500 th ely at ra for 24,420 to lcn in sh 64, San Juan de Carricitos Gr, abnd 12,290.

UPPER TEXAS COAST WILDCAT

Waller County—Failure: Floyd L. Karsten's J. J. Menke 1, 660 fr n&wl 82.8-ac lse, M. M. Coats sur, 5 mi n Raccoon Bend fld, Cockfield 4150, Wilcox 7488, flow gas, temp abnd 10,003.

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CALIFORNIA

Kern County: Independent Exploration Co.'s Anderson 1, 18-29s-21e, Cymric area, cellar.

Texas Co.'s Corehole Theta 2-1, 2-28s-19e, McDonald Anticline area, ru.

Orange County: L. & W. Oil Co.'s 1, 18-6s-10w, Huntington Beach area, foundation.

Los Angeles County: Rothschild Oil Co.'s East Santa Fe Springs Community 1, 10-3s-11w, Leffingwell area, bldg rig.

Ventura County: L. M. Lockhart's Macrate 1, 27-4n-23w, Tip Top area, dr.

Texas Co.'s Broome 1, 29-1n-20w, Camarillo area, lcn.

FLORIDA

Franklin County: Gex-Lewin 2, sec 15-6s-

ILLINOIS

Clark County: J. H. Pester et al's Athey 1, nw se ne 29-10n-14w, dr.

Coles County: Nation Oil's Wilson 1, se ne sw 4-13n-14w, lcn.

Yellow Hammer Oil's Flynn 1, se ne se 10-13n-10e, dr.

Cumberland County: W. R. Kuykendall's Walden 1, sw se se 25-9n-9e, dr.

Effingham County: Sam A. Gilpin's Brunner 1, ne sw 2-6n-5e, lcn.

Fayette County: H. Luttrell et al's Jahrous 1, se sw sw 35-5n-3e, dr.

Franklin County: George & Wrather's Burr-Oak Coal Co. 1, se sw sw 33-6s-4e, lcn.

Hamilton County: Claude Neon Lights' Wilson 1, ne se sw 30-6s-6e, lcn.

Jasper County: Superior's Schultz 1, sw sw sw 20-6n-8e, lcn.

Madison County: J. McGovern et al's Rangert 1, w½ se ne 20-5n-8w, dr.

Marion County: Ben J. Taylor's Brewer 1, ne se se 26-3n-2e, dr.

Morgan County: E. G. Brown's Bellatti 1, 16-15n-8w, dr.

Richland County: Flemming & Swann's Reed 1, se se ne 27-3n-10e, dr.

Shelby County: Joe Rexnik et al's Miller 1, sw nw nw 24-11n-4e, dr.

Wabash County: George S. Engle's Gueiswite 1, sw sw se 23-1n-13w, dr.

Wayne County: Wiser Oil's Shannon 1, sw sw ne 29-2n-9e, lcn.

White County: Vic & Von Operating's Bull Island 1, se se se 24-4s-14w, dr.

INDIANA

Gibson County: Illinois Mid-Continent's Bingham 1, se se ne 8-1s-11w, dr.

H. C. Hageman's Mauck 2, ne se nw 3-2s-11w, dr.

Demas & Waterberry's Decke 1, sw nw sw 33-1n-11w, lcn.

Posey County: C. C. Wood's Greathouse 1, 31-4s-13w, dr.

Rush Creek Oil's Elliott 1, 13-5s-14w, lcn.

Sullivan County: G. W. Gambill's Liston 1, 7-8n-8w, lcn.

KANSAS

Barton County: Ohio Oil's Porter 1, c se sw 3-17s-15w, running csg.

Butler County: E. H. Adair's Girod 1, ne ne nw 34-25s-4e, rum.

Cowley County: B. B. Blair's Pauley 1, ne ne ne 23-33s-3e, rur.

Ellis County: Fred M. Manning's Dreiling 1, nw nw sw 21-14s-1tw, dr 659.

Marion County: H. J. Uhl's Bethel College 1, ne sw ne 31-21s-2e, dr 100.

Rice County: Phil-Han Oil's Schoonover 1, se sw sw 21-18s-9w, pits.

KENTUCKY

Butler County: Hudson & Sons' Gardner 1, 20-I-32, dr.

Hopkins County: Hudson - Hess - Smith's Qualls 1, 15-L-26, lcn.

Logan County: W. B. Phillips' Grise 1, 3-G-32, dr.

NORTH LOUISIANA

Caddo Parish: Kerr-McGee Oil Ind.'s Harry Johnson 1, w of nec sw 33-19n-14w, bldg rds.

Madison Parish: Jas. M. Snowden's C. T. MacNeille 1, c nw se nw 25-17n-13e, Glenrose test.

Morehouse Parish: Pure's Nettie Robinson 1, c ne se 17-23n-8e, ru Smackover test.

Richland Parish: R. T. Sellars-J. G. Joseph's Clark 2, w of sec ne sw 2-16n-7e, dr 2200.

Pres Cochrane's Jerry Noland 1, c se se nw 26-17n-7e, Glenrose test.

Sabine Parish: Arrow Drlg. Co.'s E. Bauer 1, e of nwc ne 31-8n-13w, 3500-ft or Paluxy test.

Winn Parish: H. L. Hunt's Goodpine F-133, 25-12n-5w, 9000-ft test.

SOUTH LOUISIANA

Calcasieu Parish: Union Sulphur Co.'s Eugene Ellender et al 1, fr sec sect 17 go w 1650 and n 330 to lcn in 17-11s-10w, s flk of Choupique prospect, 5 mi n W. Hackberry fld, Hackberry sd test.

Union Sulphur's M. P. Erwin Estate 1, 1706.4 s 2355.4 w of nec 6-10s-9w, 1 mi nw Lockport prod, lcn.

Evangeline Parish: Continental et al's Pardee Co. 7, fr sec sect 17 1650 n 1650 w to lcn in 17-4s-1w, 10,000-ft test.

MICHIGAN

Allegan County: R. T. Hone's Slotman 1, sw nw sw 28-3n-14w, lcn.

C. B. Miller's Higgins 1, ne ne nw 20-3n-15w, dr.

Bay County: Fletcher and Leman's Maxson 1, nw ne ne 12-16n-3e, rig.

Isabella County: Union, Beatty and Osgood's Hall 1, ne nw nw 14-13n-5w, rig.

Kent County: Mich. Consol. Gas Co.'s Medler 1, c nw 10-10n-9w, lcn.

Livingston County: Bridgeport Oil Co.'s Reyhl A1, ne sw sw 6-3n-4e, rig.

Mason County: Superior Oil Co.'s Barothy 1, se ne sw 22-17n-16w, lcn.

Mecosta County: Maguire, Russell and Fletcher's Smith 1, ne nw nw 22-14n-8w, dr.

Missaukee County: Freeman Oil Co.'s Smith 1, ne nw nw 8-24n-7w, rig.

Montcalm County: Stewart and White's Fee 1, ne sw ne 24-12n-6w, dr.

Newaygo County: Carter Oil Co.'s Thumser 1, nw nw nw 2-13n-11w, dr.

Shiawassee County: Shiawassee Deep Drlg. Co.'s Haight 1, se se sw 10-5n-3e, rig.

Van Buren County: Harris and Fortney's Heins 1, se se ne 30-1s-16w, dr.

Wexford County: Wright and Keeler's Wilcox 1, ne ne se 32-23n-9w, dr.

MISSISSIPPI

Sharkey County: Stanolind's Lucian Boyd 1, nwc 31-10n-6w, stratigraphic test.

MONTANA

Wheatland County: Tarrant's N.P.R.R. 1, ne ne se 1-6n-15e, Shawmut area, lcn.

Petroleum County: Schwartz' Clausion 1, c se ne 27-13n-28e, spud.

OHIO

Muskingum County: Ohio Fuel Gas Co.'s Estella Buchanan 1, ne ne 15, Brush Creek Township, lcn.

OKLAHOMA

Carter County: W. F. Turner's Woerz 1, ne nw sw 10-5s-1e, dk.

Cotton County: Bridwell Oil's Dike 1, sw ne sw 6-5s-10w, dr 100.

Garvin County: Oil Carrier's Martin 1, cne ne 1-4n-4w, dk.

Carter Oil's Burford 1, 120 out of c nw nw 5-1n-1w, lcn.

Jordan Pet.'s Carrol 1, sw se nw 36-2n-1w, mit.

McClain County: Carter Oil's Price 1, ne ne 13-7n-4w, lcn.

Stephens County: Texas Co.'s Sadler 1, ne ne nw 11-2n-5w, mit.

WEST TEXAS

Coke County: Warren Pet. Corp.-Humble's J. T. Hamilton 1, c ne ne H&TC Ry. 275, blk 1-A, 6400-ft Ellenburger test.

Jeff Davis County: H. D. Cornell et al's E. R. Cornell 1, 2639 snl 660 ewl T&P Ry. 24, blk 60, tsp. 9, lcn 2500-ft test.

Pecos County: Burk Royalty Co.'s W. T. Shearer 1, 330 fr se&swl of e¼ H&GN Ry. 81, blk 10, 1800-ft cable test, dr 320.

Ward County: Roy D. Golston et al's W. L. Moody 1, c w¼ of e¼ H&TC Ry. 32, blk 34, 3000-ft rotary test.

WEST CENTRAL TEXAS

Callahan County: Boyd Gillespie et al's Tom Windham 2, 150 out sec BBB&C Ry. 145, 1500-ft cable test.

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Hamilton County: Slick Oil Co.'s C. L. Stone 1, 3300 snl 6930 ewl of H. B. Gilly sur, Pat No 1-1970, 4000-ft cable test.

Jones County: Dave Bennett-J. W. Corrells' H. W. Carter 1, 330 out nec lot 27, Lge 339, Austin & Williams sur, 3000-ft cable test.

Dave Bennett-J. W. Sorrells' Wm. C. Eoff 1, 330 out nec lot 2, Lge 338, Austin & Williams sur, 3200-ft cable test.

H. W. Snowden O&G Co.'s C. E. Dickinson 1, 11,506 nsl 1320 snl 990 wel H. B. Williams sur 273, 3600-ft rotary test.

R. P. Traugh et al's O. A. Kinney 1, 330 nsl 2893 wel H&TC Ry. 17, blk 3, lcn.

Shackelford County: Dean Bros. et al's W. P. Newell 1-M, 790 nsl 600 ewl GH&H Ry. 3, 1800-ft cable test.

Hickok & Reynolds' J. P. Morris 1-C, 220 out m/wly/nwc E. T. Ry. 198, 1950-ft cable test.

NORTH TEXAS

Archer County: L. T. Burns et al's J. H. Turbeville 1, 150 nsl 1400 ewl R. Hackett sur, 2000-ft rotary test.

S. & W. Oil Co.'s J. L. Prideaux 1, 450 snl 1625 ewl John Walker sur, 700-ft cable test.

Clay County: W. A. Barber et al's Barber & Barbour 1, 150 n of river 2500 snl 150 ewl blk 15, Bacon sbdn, 1350-ft rotary test.

Cooke County: Sinclair Prairie's Roxie Dawson 1, 1323 snl 990 ewl blk 93, Fannin CSL sur, 6000-ft Strawn test.

Throckmorton County: W. C. Estes et al's J. A. Gaither 1, 1050 snl 2750 wel of 235 ac of Day Land & Cattle Co. sur or 150 e 1050 s of nec of BBB&C Ry. sect. 1, lcn.

Paul P. Steed et al's J. B. Mathews 1, ne sw nw E. T. Ry. 224, blk 10, 1500-ft cable test.

Young County: Nu-Enamel Oil Operating Co.'s A. A. Donnell-Shell 1, 467 out nwc sect 1205, TE&L Co. sur, 4000-ft test.

EAST TEXAS

Houston County: Humble's C. W. Legory 1, 50 ne of swl 2257 se of nwl of Francis Hill sur, 2½ mi e Crockett, mim for Woodbine test.

Kaufman County: Humble's Lon Hale 1, 4900 snl 4160 ewl of J. S. Ables sur, or 660 nsl 1750 wel of 75-ac tr, mi n of Kemp, 6500-ft Travis Peak test.

Lamar County: Fred Jones et al's J. C. Gambill 1, 330 out sec 74-ac tr, or 330 fr m/n/sl 1300 fr n/w/wl of A. W. Wright sur, 5 mi nw Paris, 4000-ft test.

Van Zandt County: Delta Drlg. Co. et al's B. J. Houston 1, 467 ewl 893 wel 712 fr n&sl of 40-ac lse, 3350 wel 2150 nsl of A. L. Martin sur, 1 mi e by n Martins Mill, 9500-ft Travis Peak test.

SOUTH CENTRAL TEXAS

Williamson County: A. J. Maresh's Frank Hejal 1, 330 fr sl 660 fr el 145-ac lse, Hardy Pace sur, 1600-ft test.

SOUTHWEST TEXAS

Starr County: Henshaw Bros.-Coastal Refineries' Y. Sanchez 3, 1308 frsly/sl 460 fr ely/wl sur 344 on 640-ac lse, 3½ mi e ne Marge fld, mir 2600-ft test.

Webb County: O. W. Killam's Servando Benavides 2, 467 fr nl 1860 fr wl AB&M sur 685 and 320-ac lse, s flk Caroline-Texas fld, spud 3500-ft test.

LOWER TEXAS COAST

Refugio County: Wil-Tex Oil Corp.-Herman E. Brown's Jamie Hynes 1, 2335 s of middle nl 3375 fr ely/el 814-ac lse 750 fr el 3250 fr nl M. Arocha sur, 1 mi nw Refugio fld, 7500-ft test.

UPPER TEXAS COAST

Ft. Bend County: Kenneth Owen's William Lewis 1, 330 fr sel 660 fr swl 113-ac lse, D. W. Anthony sur, 6000 sw of Needville prod, lcn.

Humble's Wm. Cossett 1, n of Areola prospect, 3 mi s of Blue Ridge prod, Fresno area, 7000-ft Frio test.

Harris County: Cockburn Oil Corp.-H. C. Cockburn's O. P. Woodburn 2, 6275 n of nearest prod at Friendswood and in the Graben area, 467 fr n&wl 633-ac lse and A. Whitlock sur, 6500-ft test.

Lenoir J. Josey's Fee 2-A, 330 fr sl 1320 fr el sect 16 H&TC (W. C. Davis) sur, 3256 n nw Fee A-1 gas-cond disc well, 7500-ft test.

Polk County: Wynn Crosby Drlg. Co.'s E. I. Duke 1, 660 n&w sec 16-ac lse, P. J. Menard sur, 8750-ft Wilcox test.

WYOMING

Big Horn County: Paint Rock Dev.'s Hogan-Gov't 1, 2040n 1640w 12-49n-90w, Paint Rock area, spud.

Park County: Mule Creek Oil's Gov't. 2, e ne sw 27-57n-98w, Big Pole Cat, lcn.

WESTERN CANADA

Saskatchewan — Provost: Bata Petroleums, Vera Oilfields-Superior Oils' Bata-Provost 1, lsd 4 5-35-28w3rd, drlg.

Central Alberta Plains—West Viking: Anglo Canadian, Home Oil & C. & E. Corp.'s West Viking 1, lsd 10 11-48-15w4th, drlg.

South Alberta Plains — Pinhorn: McColl-Frontenac Oil-Union Calif.'s 9A-22-3-8, lsd 9 22-3-8w4th, se 10 acres, drlg.

The OIL WEEKLY'S TRADING POST

USED EQUIPMENT FORUM

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FOR SALE

■ 5 Complete Reda Pumping Units. Cables like new. 75 and 97 H.P. Motors. Max Steinbuchel, 1905 Park Place, Wichita 4, Kansas. Phone 5-6082.

■ DRILLING EQUIPMENT ready for delivery. Wichita Spudder No. 55. Price on application. Leidecker beam machine, steel frame, 60′ wood mast, spools 5000′ cable, $1500. Star spudder & beam machine, 60′ wood mast, reverse clutch, 4000′ cable, engine, belts, etc., complete, $2750. Star spudder & beam machine, 40′ wood mast, engine, capacity 2500′, $1750. Star spudder No. 42, 36′, Hercules engine, mounted semi-trailer on rubber, $2500. Standard outfit rig irons with 80′ steel derrick, $1750. Moore standard steel derrick with crown block, $750. All sizes cable tools, elevators, cable and equipment. S. W. Pressey—Pueblo, Colo.

■ SPECIAL—New, factory rebuilt, and used Guiberson Radial Air-Cooled Diesel Engines, 125 h.p. to 250 h.p. Excellent power for Sawmills, Oil and Water Well Drilling Crushers, Air Compressors, etc. Located Corsicana, Texas, and Pueblo, Colorado. Large stock New Spare Parts. Prices at 5% to 20% of regular list price. Bernstein Brothers, Pueblo, Colorado, or Bernstein Brothers c/o Navarro Hotel, Corsicana, Texas.

■ FOR SALE: Complete power driven Rotary rig with 6700′ of drill pipe. Jack knife derrick that can be used 95′ or 122′. Has lots of extra equipment and small tools. This rig has drilled one 6300′ well. For inventory and price contact Tanner Drilling Company, 300 Ricou-Brewster Bldg., phone 3-8334, Shreveport, Louisiana.

■ FOR SALE: Special shop built portable drilling rig, mounted on 1943 GMC 2½ ton, 6x6 truck, suitable for oil drilling or deep water well to a depth of 3000 feet. All new equipment. One 1942 Chevrolet 1½ ton, 4x4 water truck, with winch. Address: P. O. Box 658, Conroe, Texas. Phone 241.

■ FOR SALE—Three 14″ x 18″ latest type Model 47 Fairbanks-Morse Horizontal twin cylinder Diesel Engines, 250 H.P. @ 300 RPM, 350 H.P. @ 400 RPM. These Engines are in good condition and mounted on steel skids. These are ideally suited for driving electric Generators, central lease pumping units, Gins, Stationary Plants of all descriptions and are very simple and economical to operate. Will sell worth the money. Contact Box 1881 or phone 2412, Midland, Texas.

RED LEAD-BASE ENAMEL—90c per gallon
Rust Inhibiting Olive-green enamel especially desirable for protecting metal equipment and buildings. Prepared for the government by Pittsburgh Paints Company and Grand Rapids Varnish Company. In 55 gallon drums. Sample and complete specifications available. Samuel Black, 412 Calhoun, Houston, Texas. Phone C-0159.

FOR SALE

50— 500 Barrels
10— 1,000 Barrels
20— 5,000 Barrels
4—10,000 Barrels

Heavy A.P.I. New closed bolted type steel tanks now located at Ogden, Utah. Can quote reasonable prices in order to move from present premises at once.

JOS. GREENSPON'S SON PIPE CORP.
National Stock Yards, St. Clair County, Ill.

HELP WANTED

■ REFINERY DRAFTSMEN AND DESIGNERS WANTED. Experienced in general equipment layouts, piping, pressure vessels, pumps, concrete and structural steel design, and material specifications. Location in Mid-Continent area. Salary dependent upon education and experience. Box 45, The Oil Weekly, Houston, Texas.

HELP WANTED

■ WANTED: Experienced draftsman for employment in Petroleum Engineering Department. Advancement not limited for employee with initiative. Box 39, The Oil Weekly, Houston, Texas.

■ GRADUATE PETROLEUM ENGINEER over 40 years of age. Specialized in study of oil and gas reserves general Mid-Continent region. To head reserve section large independent company. State full particulars in letter. Box 41, c/o Oil Weekly, Houston, Texas.

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LEASES, DRILLING, ACREAGE, ETC.

■ Drilling contractor wants acreage proposition or farm-out in Permian Basin. Must have merits. Contractor, Box 1549, Odessa, Texas.

WANTED TO BUY

WANTED

48 to 60 inch, 1000 lb. working pressure used Natural Gasoline Absorber for immediate inspection and delivery. Will consider two smaller absorbers. Call or write Van Thompson, Southern Union Gas Company, 1104 Burt Building, Telephone L.D. 837, Dallas, Texas.

SITUATION WANTED

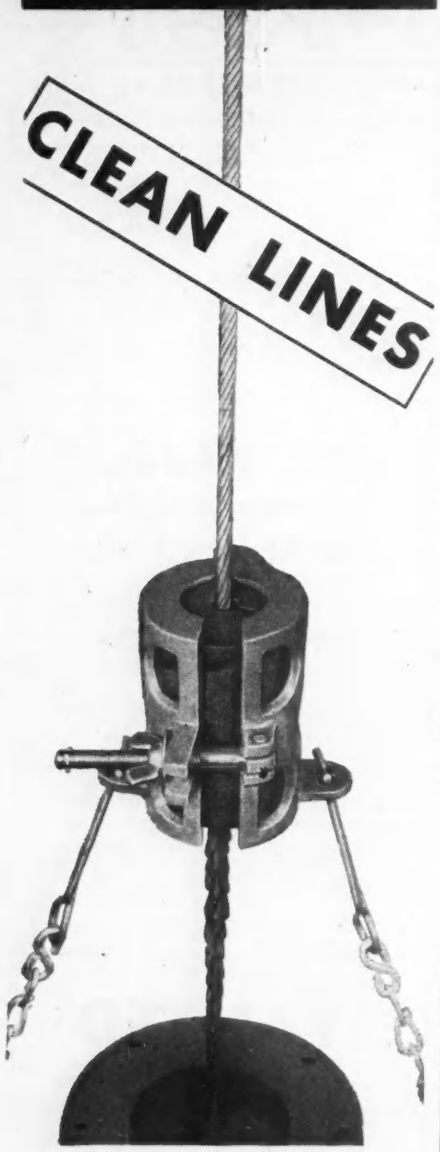
■ SITUATIONS WANTED, FOREIGN. Seismic interpreter with 10 years experience desires position as supervisor, coordinator or interpreter in foreign service. Capable and ambitious; want job with future. Box 46, c/o The Oil Weekly, Houston, Texas.

■ DRILLING AND PRODUCTION SUPT.: Age 44, 27 years experience in drilling and production operations. 22 years supervisory experience in drilling (Rotary and Cable tools), completions, production developments, workover operations and flush and stripper production. References if desired. Address: Box 32, c/o The Oil Weekly, Houston, Texas.

■ Position as production supervisor, with independent operator with betterment possibilities. Graduate engineer, age 39. Eleven years production engineering, major company, shallow and deep production. Also capable handling geological studies, drilling operations and well completions. Presently employed, desire change. Box 48, c/o The Oil Weekly, Houston, Texas.

"Best Bet Yet"

CLEAN LINES



A clean wire line helps your crew. They can work safer and better on a clean floor, free from drippings. With a Patterson-Ballagh Wire Line Wiper the line is stripped completely of mud and oil. A compact steel housing contains a spiral rubber which is inexpensive and easily replaced. The rubber wipes the line as it comes out of the hole. Spark-proof. Use one on every well.

Now made of natural rubber.

See Composite Catalog

Patterson-Ballagh
WIRE LINE WIPERS
Los Angeles 1 Houston 10 New York 6

SQUEAKS from the BULL WHEEL

This Curious World

Marriage is like a bath—by the time you get used to it, it's not so hot.

Some girls aren't a bit afraid of mice. Others have pretty legs.

Women are wise about facts and figures. A girl with a good figure soon learns the facts.

Confucius say: "Wash face in morning. Neck at night."

Women without principle draw considerable interest.

Many a steady man has fallen for a slip of a girl.

Epitaph on an old maid's grave: "Who said you can't take it with you?"

Beware of women who stroke your hair. They're really after your scalp.

If all the big horses say "neigh," where do the little horses come from?

A Curious World

Our grandmothers believed that there was a destiny that shaped our ends; but the modern miss has more faith in girdles.

Best way to break the ice with a girl is to break it in a highball.

"Oh, dear," she sighed, "I've missed you so much." And raising her revolver, she fired again.

No Shrinking Violets?

"Has that florist any children?"

"Two. One is a budding genius and the other a blooming idiot."

Trail's End

Two drunks were whizzing down the road.

"Shay, look out there, Joe. You almost ran into that telephone pole."

"Who, me? I thought you were driving!"

Went Too Far

"You're looking blue."

"Yep. My wife found out I'd been running around with my stenographer."

"That's bad."

"Yeah, and the worst of it is, my wife went and told the maid!"

Wasted Time

"Powder my back, Bill?"

"How far down, honey?"

"To where the dress begins."

"But I though you said your back!"

Same Thing

Her hat was askew, her clothes rumpled and one shoe missing.

"Knocked down by a motorist?" she was asked.

"Nope. Picked up by one!"

Ecstatic Exit

"How'd you get the black eye?"

"I was living the life of Riley and Riley came home."

Hints for Modest Maidens

"Hands off, Columbus. You've discovered enough for one night!"

The Woman's Way

"Hi, luscious. Which way you going?"

"You despicable wolf! You abominable cad! That's no way to address a lady whose husband is out of town and who lives at 3015 Wentworth, telephone L-7062!"

Strainer Is Better

"Do insects ever get in your corn, Farmer Jones?"

"Yep, but we just fish 'em out and drink it, anyway."

Life Is Like This

"I've never seen your beautiful eyes so dreamy."

"Naw, you ain't never stayed so late, Toots."

Room Service

Hotel manager: "Did you find any of our towels in that man's suit case?"

Hotel detective: "No, but I found a chambermaid in his grip."

Poet's Nook

The naked hills lie wanton to the breeze,
The fields are nude, the groves unfrocked,
Bare are the limbs of all the shameless trees.
No wonder the corn is shocked!

Encore

The bather's clothes were strewed
By winds that left her nude.
Then a man came along, and unless
I am wrong
You expected this line to be lewd!

Zero Hour

As I grow old with more to hide
Bathing suits get briefer . . .
Will four-score-seven coincide
With a fig leafer?

Thumping Signal

Why do you want your little boy to sleep in that high bed?

So we can hear him when he falls out.

BETTER
Steel Forgings for
CHRISTMAS TREE
FITTINGS

BEAUMONT
WELL WORKS COMPANY
BEAUMONT, TEXAS

Hercules Tool Plant at Tulsa

Hercules Tool Company is located in their new offices and plant at 1201 West 17th Street, West Tulsa, having moved from 1073 North Owasso. The modern office buildings are of brick and tile, and the plant adjoining is of steel. The company was established in 1925 by S. P. Tschappat, its present president, and Harold Callahan, and produces principally oil well pumping equipment on patents to which Hercules has exclusive manufacturing and sales rights.

Linde Air Products Company Expands Amarillo Plant

Expansion of its facilities at Amarillo, Texas, to include an acetylene producing plant to be located at N.E. Third Avenue and Philadelphia Street, Amarillo, Texas, is being completed by The Linde Air Products Company, a unit of Union Carbide and Carbon Corporation.

The plant will supply industries in the area with the company's main products. Present warehouse facilities at 103 South Pierce Street will be discontinued, and all producing and warehouse operations will be consolidated at the new plant. The company has operated an oxygen plant at N.E. Third Avenue and Philadelphia Street for a number of years.

Atlas Lumnite Cement Merges with Universal Atlas Cement

The Atlas Lumnite Cement Company has been merged into the Universal Atlas Cement Company. Both are wholly-owned subsidiaries of the United States Steel Corporation. The organization of the former Atlas Lumnite Cement Company will be known as Lumnite Division, Universal Atlas Cement Company, with headquarters at 135 East 42nd Street, New York 17. The manufacture and sale of Lumnite, a special hydraulic cement, will be continued under the direction of Joshua L. Miner, vice president, Lumnite Division.

Weksler Adds Export Division To Handle Foreign Business

An export division to handle foreign inquiries and sales, has been formed by Weksler Thermometer Corporation, New York. It will be located at 11 West 42nd Street, New York 18, under the management of the Richard Eisenmann Export Company.

Weston Electrical Instrument Corporation Adding to Facilities

In order to expand engineering and administration facilities, and at the same time release space required for manufacturing, the Weston Electrical Instrument Corporation is constructing a large new engineering and administration building on the plant grounds at Newark, N. J. The three-story structure is to be T-shaped, of brick-faced reinforced concrete, and will have 78,620 square feet of floor area.

The plant, needed to take care of rapidly increasing production, is expected to be completed shortly.

Beechcraft Aircraft Corporation Arranges for Loan of $4 Million

Beech Aircraft Corporation, Wichita, Kan., has completed arrangements for a $4 million loan agreement with a syndicate of 15 banks headed by the Fourth National Bank in Wichita. The credit was set up for the purpose of financing production of the types of Beechcraft airplanes currently in production, and new models which the company will announce in the near future. The company plans soon to reveal details of a new all metal, four place, personal and charter airplane. Designs are also being completed for a 20-passenger airplane of advanced model for feederline operations out of small airports. During the war a syndicate of banks loaned Beech a credit of $50 million under the V Loan regulations. Prior to that another syndicate had established a credit of $2 million for the company. These loans have been repaid.

Mid-Continent Supply Opens West Coast Office

Mid-Continent Supply Company, Fort Worth, has opened a West Coast District office in the Bankers Building, Los Angeles, to handle West Coast and export business. L. A. Pyeatt is district manager in the new office.

Continental Supply Opens Store and Office

The Continental Supply Company, Dallas, has announced the opening of a store at Liberal, Kansas. Store manager is C. A. Beil; F. E. Prosser is sales representative. The Tulsa office of The Continental Supply Company has moved to Room 515, National Mutual Building, 619 South Main Street.

Petroleum Reservoir Engineers for Service in South America

In connection with increased development, our associated companies require experienced petroleum reservoir engineers for service in South America. Applications may be made in person or by letter to

ASIATIC PETROLEUM CORPORATION
Room 1022
50 West 50th Street
New York 20, New York

or

SHELL OIL COMPANY, INCORPORATED
Shell Building
Houston, Texas; San Francisco and Los Angeles, California;
and Mayo Building, Tulsa, Oklahoma.

MEN IN THE INDUSTRY NEWS

Floyd C. Brown, vice president and general manager of Natural Gas Pipeline Company of America since its organization, has been elected president, succeeding **W. Alton Jones,** who will serve as chairman of the board. Brown will continue his duties as general manager. He has also been elected president of the Texoma Natural Gas Company and the Quadrangle Gas Company. He joined the Empire Companies organization in 1917 and advanced rapidly through posts of engineering responsibility to a vice presidency in 1926. When the Continental Construction Company was formed in 1930 to build and operate the Texas-Chicago gas pipe line, He supervised construction and operations. The name, Natural Gas Pipeline Company of America, was adopted in 1931.

»

A. I. Brainard has resigned as president of the Beaumont Iron Works Company, subsidiary of the American Locomotive Company, but will act in a consulting capacity until January 1, 1947.

»

J. B. Trotman has been appointed head of the new Bowser, Inc., Grand Rapids, Michigan, industrial pump division. Headquarters of the division will be in Ft. Wayne, Indiana. He has been identified with the pump industry for 30 years and has been for the past 6 years general sales manager of Blackmer Pump Company, also of Grand Rapids.

Economy!

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GAS LIFT

The Halbert Gas Lift has proved through 10 years of exacting service to be the simplest—most economical—and most trouble-free gas lift system on the market.

ONLY ONE WORKING PART in the HALBERT Gas Lift. No springs, diaphragms, or trigger works to get out of order.

Operates efficiently, economically; with an absolute minimum of attention; and with either formation or extraneous gas. Here are some examples of applications of the Halbert Gas Lift to typical production problems.

- **TO CONTROL HIGH GAS/OIL RATIOS.**
- **FOR WELLS PRODUCING LARGE VOLUME OF FLUID.**
- **FOR WELLS WITH LOW BOTTOM HOLE PRESSURE.**
- **PARAFFIN PREVENTATIVE.**

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R. L. Keyes has been named manager of the Arkansas-Louisiana Division, producing department, The Texas Company, with headquarters in New Orleans, succeeding **R. C. Stewart,** retired, a pioneer in the development of submersible drilling barges and submersible boiler barges. Stewart entered the service of the company as a warehouseman in the Evangeline field, South Louisiana, in 1908. Keyes came from California to New Orleans in 1941 as assistant division manager. He first became associated with the company in 1928 as a petroleum engineer, and has held many responsible jobs along the line.

R. L. Keyes

»

August C. Smith and **Winslow M. Lovejoy** were elected directors of The North Central Texas Oil Company, Inc., to fill the two vacancies existing on the board of directors. Smith is a member of Choate, Byrd, Leon & Garretson, and Lovejoy of Post, Morris & Lovejoy, both New York firms.

»

Roy A. Hartzell, assistant manager of the safety department, Standard Oil Company of Indiana, retired on company annuity after 25 years of service. In 1920 Hartzell became associated with the Midwest Refining Company, former subsidiary of Standard. He resides in Whiting, Indiana.

»

Arthur J. Harvey, president of the Tex Harvey Oil Company, has transferred headquarters from Dallas to Palestine since the firm's East Texas operations are largely centered around the latter city.

»

William S. Clarke, a law graduate of the University of Texas, has been added to the legal staff of The Texas Company with headquarters in Houston. Clarke was engaged in private legal practice before joining the Army Air Forces in 1942.

»

Charles R. Criss has been transferred from the home offices at Cleveland, Ohio, to the Mt. Pleasant, Mich., producing division offices of the Sohio Petroleum Company, where he becomes assistant district engineer.

»

Louis C. Vogelsang was elected to the office of general manager of the Rio Grande Valley Gas Company at a recent meeting of the board of directors. He has been engaged in industrial engineering, working with the San Antonio water and light departments and the San Antonio Public Service Company. He succeeds **Joseph C. Jordan,** who is retiring to devote himself to private interests.

Henry Strobel, Jr., has been appointed Cincinnati district representative of the Hammond Iron Works, Warren, Pa.

»

Dan Duncan, field engineer of Emsco Derrick & Equipment Company, has just returned from an extensive trip to Venezuela where he assisted in setting up company rigs in the Guico area, and checked on the operation of power rigs and other miscellaneous equipment for American companies operating in the Maracaibo fields.

»

H. C. Teasdel, vice president and secretary-treasurer of the California Company, New Orleans, has been elected to membership in the Controllers Institute of America, a technical and professional organization of controllers devoted to the improvement of controllership procedure.

»

James Parker has been reinstated as West Texas agent for the Arrow Drilling Company, Tulsa, after serving nearly 6 years in the Army. Now at Abilene, future headquarters will be at Midland, Texas.

»

F. W. Hutchinson, widely known radiant panel heating authority, has become consultant to Minneapolis-Honeywell Regulator Company. He will assist with Honeywell's large scale test program to determine proper methods of controlling radiant panel heating in all types of buildings, and is helping Honeywell engineers in the preparation of a manual on the theory and application of radiant panel heating controls, to be published in the fall. Hutchinson has spent 10 years in research on panel heating, including 3 years in 9 countries of Europe where he surveyed more than 1200 installations.

»

L. G. Greer, construction superintendent, has been retired with life income by United Gas Corporation. For many years he was maintenance superintendent in charge of United Gas properties in Texas, Louisiana and Mississippi. He began his career in the gas industry in 1916, working for the Atlanta Gas Light Company and the El Paso Gas Company and went to work for United Gas in Lake Charles in 1931.

»

John H. Moran, formerly at Oklahoma City with the Fluid Packed Pump Company, has been appointed sales representative at Houston for the Oil Center Tool Company.

»

R. E. Kirberger, sales manager for Franks Manufacturing Corporation, Tulsa, left for an extended tour of South American oil fields to survey the needs for drilling and servicing equipment in the major oil producing areas of Latin America, which will include educational presentations in the use of portable oil field equipment.

R. E. Kirberger

MEN IN THE INDUSTRY NEWS

J. G. Floyd has been promoted to manager of the Arkansas-Louisiana-Texas District of the Bethlehem Supply Company, with headquarters in the company's new store at Shreveport, Louisiana. Employed by Bethlehem as a field representative in 1941, he was given leave

J. G. Floyd

R. E. Williams

of absence in 1942 to re-enter military service. He is now a lieutenant colonel in the Officers' Reserve Corps. Floyd succeeds **Fred Parks,** who was promoted to resident manager at Houston. **R. E. Williams,** who joined Bethlehem as an assistant district manager of the Panhandle District, has been named manager of that district. He has been in the supply business since 1921, having spent 22 years with the Continental Supply Company in Texas, Wyoming, Missouri and Illinois. His new headquarters will be at Pampa, Texas.

»

Edward F. Rossiter has been appointed superintendent of The Goodyear Tire & Rubber Company's mechanical goods plant in Sydney, Australia. He succeeds **C. H. Maxwell,** who has held the Australian post since 1930, and who is returning to the company's Akron, Ohio, organization for reassignment. Rossiter joined Goodyear in 1927 as a product inspector, and since then has held several responsible posts in the mechanical goods division.

»

H. K. Babbitt, production manager of the special products section of the Du Pont Company's explosives department, has retired after rounding out 40 years service, starting as a draftsman in the engineering department. After he had transferred to the explosives department, he was superintendent of several plants and in 1911 went abroad, studying explosives manufacture in England and Germany. He returned to the Pompton Lakes Works, becoming manager from 1918-1925. He was made assistant director of the special products division in Wilmington and later director. Since 1934 he has been in his present position. The special products section will be consolidated with the black powder section of the explosives department under the direction of **H. C. Peinert,** production manager.

»

Fayette B. Dow, National Petroleum Association general counsel, Washington, D. C., was awarded the Amherst College medal for eminent service at the commencement exercises. It was given in recognition of his service in connection with the Joseph B. Eastman foundation.

Alfred Cutler has been appointed European sales representative of the International B. F. Goodrich Company, with headquarters in Switzerland. When the factory of the N. V. Rubber Fabriek Vredestien, The Hague, Holland, which will manufacture B. F. Goodrich brand tires, is completed, Cutler will become sales manager for that country and supervise exports of the company to the European trade. Representative of International B. F. Goodrich in the Far East for 10 years before the war started, he had been in industrial products sales of the domestic company in the Philadelphia district for the last several years.

»

J. W. Weingartner has been made production control manager of the Brown Instrument Company, Philadelphia, and will also direct purchasing. He has been with this industrial division of Minneapolis-Honeywell Regulator Company for the past 22 years. **Charles Goodman** has taken over the duties of purchasing agent under Weingartner's supervision. **William Lawson** has been named assistant production control manager.

»

Don Chappell, division geologist; **Marion Moore,** division geophysicist, and **F. E. Swenson,** division land man for the exploration department, Transwestern Oil Company, San Antonio, Texas, were guests of the Tulsa offices of the Sunray Oil Corporation. They familiarized themselves with the Sinclair organization, preparatory to the forthcoming merger of the two companies in July. Sunray is the surviving company.

»

Joseph McCoy, geologist with Sinclair Prairie Oil Company, has been transferred from Jackson, Mississippi, to the Rocky Mountain region, with headquarters at Casper, Wyoming.

»

Campbell Hippen, of the legal department, Superior Oil Company of California, at Oklahoma City, resigned to open an office in that city's Apco Tower. He will specialize in oil law.

»

L. L. Nettleton, former head of gravity interpretation for Gulf Research and Development Company, Pittsburgh, for 18 years, has been named a firm member of Gravity Meter Exploration Company, Houston. He is the present editor of "Geophysics," official publication for the Society of Exploration Geophysicists. He was a research physicist for Union Switch and Signal Company for 5 years before he joined Gulf. Nettleton holds B.S., M.S. and Ph.D. degrees in physics and was an instructor of physics at Carnegie Institute of Technology, and advisory professor of physics at the University of Pittsburgh, in charge of instructions in geophysics.

L. L. Nettleton

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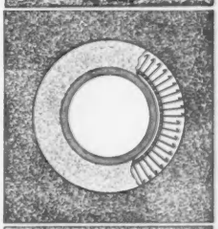

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Preventing Channeling

A series of B & W Wall Cleaning Guides placed on the casing opposite the productive sections helps to insure a good cement job by . . .

Removing mud cake. The abrading action of the multiple spring wires removes the mud cake from the wall of the hole, giving a clean surface for good cement bonding.

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Preventing channeling. The multiple wires give even distribution of cement, preventing any "zone of weakness," eliminating fluid migration and providing low gas/oil ratio.

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GULF COAST: 305 M & M Building
Houston, Texas • Phone: Preston 9783

Emerson H. Todd has been appointed sales manager of American Cable and Hazard Wire Rope Divisions of American Chain & Cable Company, Inc., succeeding **Frank W. Bemis,** resigned. With the company since 1925, for the past several years he has been Chicago district sales manager for the American Cable and Hazard Wire Rope Divisions. Prior to that he was chief engineer on wire rope at the mill in Wilkes-Barre, Pennsylvania. **George Gunther,** with the company prior to his service with the armed forces, has been appointed Chicago district manager for the wire rope divisions succeeding Emmerson Todd.

»

Thomas F. Dowd, Jr., has been appointed assistant to the treasurer of the Continental Oil Company. He joined the company after being employed by Arthur Young & Company, New York auditors.

John H. Mathis has been elected secretary of the Lone Star Cement Company, New York, succeeding **G. J. Donaghy,** resigned. **Ernest Gruenwald** has also been appointed manager, "Incor" and Technical Service, succeeding **Purd B. Wright, Jr.,** resigned.

»

L. P. Foote, Ohio Oil Company, director of the South Coles Levee Unit Plant Engineers Group, delivered a paper on field development and the technical details of the new cycling plant project located in Kern County, California, at the July 2 meeting of the California Natural Gasoline Association.

Deaths

J. F. Hutchins, 61, died in Houston on July 3. He was well known as an independent oil operator and developer, and was once part owner, president and general manager of the 100,000-acre Pierce Ranch. He became associated with the properties in 1908, and was general manager at the time the first oil discovery was made on the ranch in 1934. Four large pools have been discovered and are in production. He retired from active management in 1944.

»

Clifford R. Ross, 40, independent oil operator of Tulsa, died in Wewoka, Okla., July 4 of a heart attack. He had been active in various sections of Kansas and Oklahoma as a driller.

Ali A. Hassan, 86, geologist and engineer, died June 7 at East Orange, New Jersey. He was born in Istanbul, Turkey, and was educated at the Universities of Vienna, Leopole and Cracow. His professional work took him to many parts of Europe, Russia, South America, Canada and the United States. He was a member of the International Geological Congress, a fellow member of the American Association for Advancement of Science, and a member of the Science League of America.

»

Guy F. McGee, 54, Tulsa independent oil operator, died at Tulsa July 9 after a brief illness. He had been interested in various Oklahoma operations, and aided in development of several Illinois fields from 1938 to 1945.

»

Samuel Irvine Ford, 78, Tulsa, former division superintendent of the Mid-Continent Pipe Line Company, died July 8. He came to Oklahoma about the time of statehood and worked with the old Prairie Oil Company. Later he joined the Oklahoma Refining & Producing Company, staying with the company until it was absorbed by The Pure Oil Company.

»

Delbert Leggett, 61, assistant manager of the land department for Stanolind Oil & Gas Company in the Fort Worth division and an employe for 22 years, died July 5 at Fort Worth after a lengthy illness.

»

L. A. McCaghren, 43, died June 20 in Houston after an illness of several months. He organized the Local Oil Company, Refugio, of which he was president at the time of his death.

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